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Vol. 7 No. 2 November 1989 £1.25

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ARCADE
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Graphics add a
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CONTENTS

Cover Story

14 Arcade Corner

Grab your boots and kit ready to battle on the pitch in the World Cup. We review the first Electron football simulation to feature arcade quality graphics.

6 News

All the latest developments in the world of the Electron. Plus the Gallup chart.

9 Storker

Type in and play this superb multi-level sideways scrolling arcade game - one of the best we've published.

17 Printer test

A solid Citizen is put through its paces and comes up trumps.

18 Pendragon

More hints and tips for adventurers, plus a map to Castle Frankenstein.

21 Shopper

Don't let the Christmas shopping crowds get you down - sit back and relax with this computerised simulation.

26 Dollar deals

The stockmarket is transformed into a computer game in this type-in listing. Can you crash the dollar?

27 Scroller

Type a message and watch it smoothly scroll in triple-height across the screen.

29 Programming

Francis Botto discusses the pros and cons of flowcharting for programmers.

31 Octavia

Find out what it's like to be an octopus in this watery game of life beneath the waves.

36 Housecall

We visit Superior Software and report on one of the most prolific producers of Electron games software.

39 In Action

This complete survey of the printer market will enable you to choose one best suited for your purpose.

41 Micro Messages

A selection of the many informative and interesting letters you have been sending us over the past few weeks.

Published by
Database
Publications Ltd
Europa House,
Adlington Park, Adlington,
Macclesfield SK10 4NP.

Editorial, Admin, Advertising:
Tel: 0625 878868
FAX: 0625 879966
Telex: 9401191
MicroLink: MAG001
Prestel: 614568383

Subscriptions:
051-357 2961

ABC

22,029 Jan-June 1988

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Diamond Europress Sales & Distribution, Unit 1, Burgess Road, Ivyhouse Lane, Hastings, East Sussex TN35 4NR. Tel: 0424 430422.

Printed by Carlisle Web Offset

Electron User is an independent publication.
Atom Computer Ltd are not responsible for any of the articles in this issue or for any of the opinions expressed.

Electron User welcomes program listings and articles for publication.
Material should be typed or computer-printed, and preferably double-spaced. Program listings should be accompanied by cassette, tape or disc. Please enclose a stamped, self-addressed envelope, otherwise the return of material cannot be guaranteed. Contributions accepted for publication will be on an all-rights basis.

ISSN 0952-3057

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Back to school

10 educational games for
the Electron for just
£5.95

Order on Page 46

Add-ons boost for Electron

ELECTRONICS engineer John Wike has produced two new add-ons to increase the power and BBC compatibility of the Electron through his company Jafa Systems (0222 887203).

Designed to fill a two year gap in the market, his RS423 cartridge plugs into the Plus 1 slot and is driven by the software in the Plus 1. The connector is similar to that in the BBC Micro so compatibility with serial peripherals such as modems and printers is assured.

The cartridge also contains a 28 pin socket to take 8k or 16k eproms or a 32K ram configured as two sideways slots. The ram is protected against rom software which tries to corrupt itself, such as View.

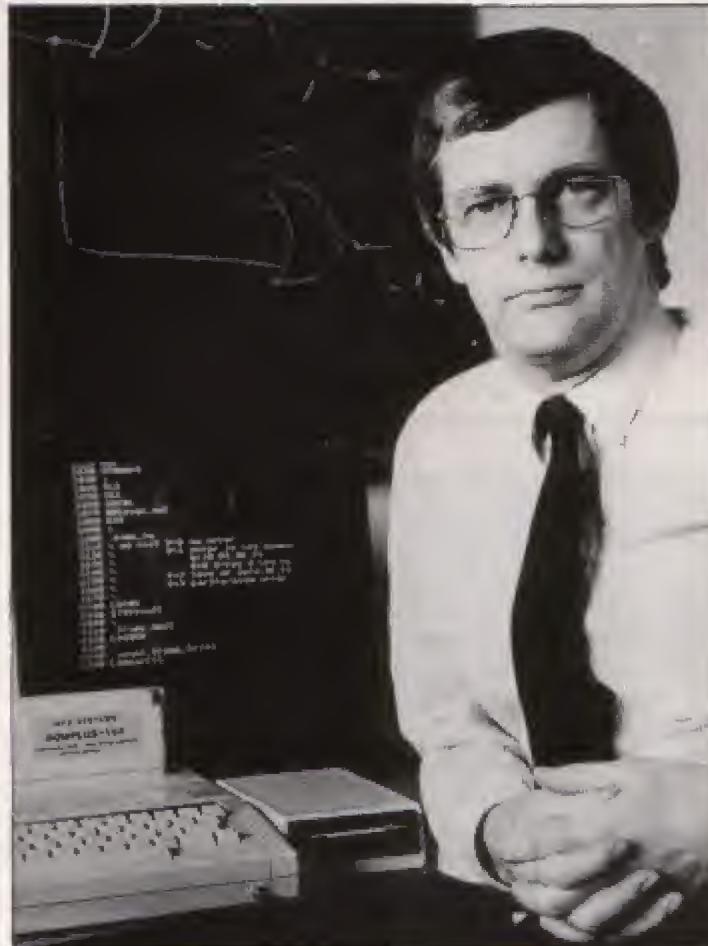
The protection can be switched out to allow sideways ram based software such as Pres ADFS E00 to be used.

Opening up wider possibilities for Electron users wanting to get into comms, the board costs £29.95 uncased. A case is available for £5 and a 32k ram device costs £20.

Due soon from Jafa is a Mode 7 Mark 2 unit which has been upgraded to be cheaper and more compact than its original Mode 7 adaptor, making many more BBC programs available to Electron users.

Although it retains the display chip used in the BBC Micro to give rounded teletext style characters, it dispenses with the scanning circuitry, giving a much smaller board which fits into the Electron above the ULA.

Scanning is performed by the ULA set in Mode 4 in a similar way to the simulator using Mode 2. This increases speed and uses much less memory than the simulator. Once again, the memory used is in shadow ram if the Slogger Master Ram board is used giving HIMEM



John Wike... new add-ons

at £70.00 with that board.

A rom expansion system is needed to hold the operating system eprom which also contains Prestel terminal software and a demonstration of the screen editor/carousel program which is available separately.

Costing £49, the unit is designed to be easily soldered in place, but a fitting service will be available for £10. Alternatively, a kit including board, eprom and instructions will cost £25. The Mode 7 simulator package is still available.

A super Sam from Superior

SUPERIOR Software (0532 459453) is poised to release what partner Steve Hanson believes could be the best Sam yet. Play it Again Sam 11 is certainly an impressive compilation and is aimed at a late October, early November release. It leads off with the ever popular Barbarian.

In November, Electron User gave the second title, Pipeline, 10 out of 10 in every review category. It was described as "a masterpiece of brain twisting entertainment" containing the best of both Repton and Ravenskull.

With 133 screens, third title Baron is a massive arcade adventure from new writer Angelo Sparacino. The

Superior men were so impressed by its scope that they were tempted to a single, full-price release before opting for compilation.

The line-up for this latest Sam offering is completed with the evergreen Acornsoft favourite Monsters and the compilation will sell for the usual Electron price of £9.95.

Also due from Superior at

A share in Wordpower

FIVE years after its release, word processing package for the Acorn range Wordpower has been made available as shareware by Ian Copestake Software (051-648 6287).

For £5 you receive a full working copy of Wordpower complete with documentation. Those who like the program can become registered users by paying the rest of the purchase price. Anyone who is not convinced can keep the package anyway or give it to someone else to try.

If the goods are returned in perfect condition within two months, the £5 is refunded, less postage costs.

"Now everyone can test our claim that Wordpower is the best in its class", said Ian Copestake. "While Wordpower shareware can be obtained almost free, it is still protected by copyright laws. Those who become satisfied users are trusted to register and obtain any site licence which may be required. Failure to do so would just reduce the chance of other software being released in this way".

Anyone requesting the shareware is asked to send details of their computer. Ian Copestake Software is based at 10 Frost Drive, Wirral, Merseyside, L61 4XL.

the end of October is full-price release Ricochet. A Ravenskull type game, it is a huge arcade adventure with four levels and 100 screens on each. The Hero is a bouncing ball which jumps according to how much it is depressed. Aggravating until you get the hang of it, but addictive when you do. It will sell for £9.95.

Sharp look for monitors

A REAL space-age anti-glare VDU screen has been launched by Data Sound (01-883 6421).

The Olympus Tipto is made from glass specially

designed for the space shuttle programme. Fixed on to the monitor with adhesive material it is designed to give a sharper image and costs £89.



SOFTWARE

Bargains



To operate a joystick from the Electron, you will require an interface of some sort. We supply a single unit Commander 3 Interface, which will take most 'Arcade-Type' joysticks, as well as a Spin 'D' connecting plug. The PLUS 1 interface as well as having 2 ROM cartridge slots, & printer port, also has in-built, an analogue joystick interface, compatible only with joysticks with a 15 pin 'D' connecting plug.

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ACORN SOFTWARE HITS 2	C	£9.95	£4.95
(Marship Command, Arcadians, Snooker, Meteors)			
MICRO POWER MAGIC 1	C	£7.95	£3.75
(Stock Car, Felix Evil Weevils, Esc, Mazebase, Swag, Chess, Bandits at 3, Galactic Commander, Adventure, Cybertron Mission, European Knowledge)			
MICRO POWER MAGIC 2		£7.95	£3.75
(Bomblin Bee, Gauntlet, Bubble Trouble, The Mine, Frenzy, Felix Fruit, Danger UXB, Swoop, Posttron, Killer Gorilla)			
PLAY IT AGAIN SAM	C	£9.95	£4.95
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PLAY IT AGAIN SAM 6	C	£9.95	£4.95
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(Zings, Owak, 3D Doty, Rapton Thru Time)			
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(Planatoid, Firebug, Maze)			
SUPERIOR COLLECTION 3	C	£15.00	£4.95
(Syntron, Rapton, Rapton 2, Karate Combat, Deadstar, Mr Wiz, Smash & Grab, Overdrive)			

RECENT RELEASES AND SPORT

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Pipeline	9.95	6.95
Repton Infinity	12.95	8.95
Repton Thru Time	6.95	5.95
Tank Attack	12.99	8.95
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GRAPHICS Part of the spreadsheet section, it lets you draw bar charts, pie charts & histograms to give a graphic presentation of your statistics. Helps to give life & colour to the dull figures!

school 2

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Don't miss out on the mass of material that's appeared in *Electron User* over the past few months. Bring yourself up to date with this back issue bundle, packed with games, utilities, features and programming tutorials.

Here's what you'll find in the April 1989 - September 1989 bundle:

May 1989 issue:

Games: Eliminator. **Utilities:** EZ Type, DFS disc formatter. **Features:** Tournament sorts, Party Cocktail Creator, Landscape Designer, Fractal Generator. **Reviews:** Barbarian II, Circus Games, Superman, Mode 7 Simulator Rom.

June 1989 issue:

Games: Tic Tac Rhymes, Duel. **Features:** ADFS osword calls explained, creating customised tapes, maps to Woodbury End and Palace of Magic. **Utilities:** Disc-based database, new CIRCLE graphics command, Morse Code Tutor. **Reviews:** Holed Out, Tank Attack, Sam 7.

July 1989 issue:

Games: Jet Bike arcade adventure, educational fun with Ladder Adder, Time bomb arcade fun. **Utilities:** Speedy Reader. **Reviews:** Predator, Stormcycle, Sam 8. **Features:** Jafa Systems interview, Disc error codes documented, 10 Liners, Philosophers Quest and Palace of Magic mapped.

August 1989 issue:

Games: Rollerball, Bingo. **Reviews:** Alps, Turtle Worlds, White Magic, Play it Again Sam 9. **Features:** Map of Kayleth, Repton Infinity tips. **Utilities:** Disc Housekeeper, Mode 2 screen compacter, Titration, Chemical Equations.

September 1989 issue:

Game: Snakes. **Reviews:** Keyword, Basic Editor Plus, Ballistix, Sam 10. **Features:** Arcade Corner, Electron history. **Utilities:** Attribute editor, magazine database.

October 1989 issue:

Game: Spinning frustration, Jet Bike, Robokill. **Reviews:** Rodeo Games, Hi Q Quiz, Spooksville, Lombard.

Features: Exile solution, Electron carrying case. **Utilities:** Elkpaint, Disc Menu.



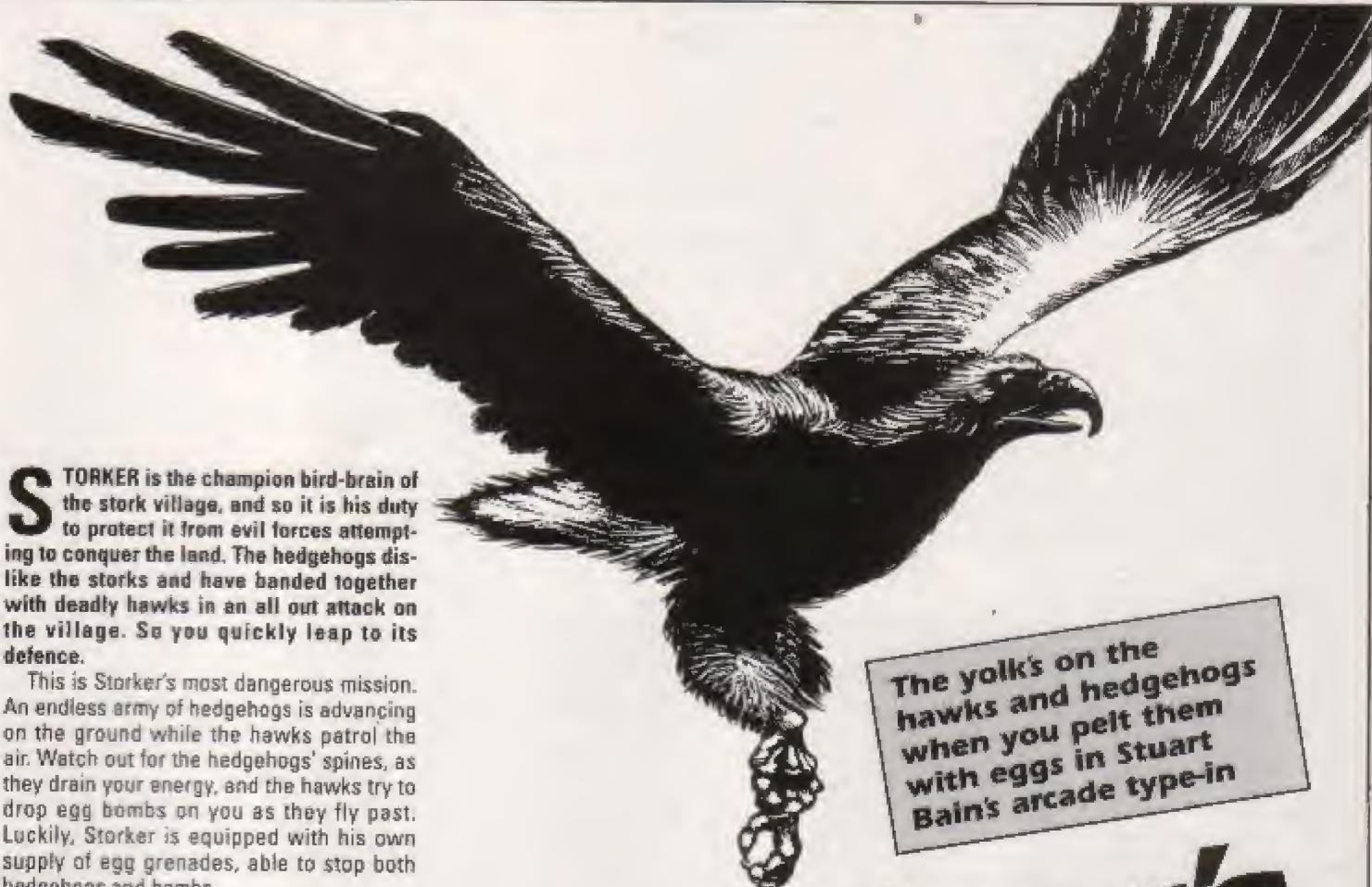
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Everything you ever wanted to know about your Electron but were afraid to ask is in these back issues of Electron User

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STORKER is the champion bird-brain of the stork village, and so it is his duty to protect it from evil forces attempting to conquer the land. The hedgehogs dislike the storks and have banded together with deadly hawks in an all out attack on the village. So you quickly leap to its defence.

This is Storker's most dangerous mission. An endless army of hedgehogs is advancing on the ground while the hawks patrol the air. Watch out for the hedgehogs' spines, as they drain your energy, and the hawks try to drop egg bombs on you as they fly past. Luckily, Storker is equipped with his own supply of egg grenades, able to stop both hedgehogs and bombs.

You start the game on the left-hand side of the screen and the hawks and hedgehogs attack from the right. You must dodge the hawk egg-bombs and dispose of the hedgehogs with your own egg grenades.

To complete each screen, Storker must catch bugs which buzz overhead. The number to eat is shown at the top of the screen. Once Storker has had his fill he must run to the right-hand edge of the screen.

Touching hedgehogs or being hit by bombs weakens him - his strength is shown at the top of the screen. A bonus will be awarded depending on the amount of strength left.

The yolk's on the
hawks and hedgehogs
when you pelt them
with eggs in Stuart
Bain's arcade type-in

Storker's run

CONTROLS

Z	Left
X	Right
Return	Jump
Space	Throw grenade

```

10REM Storker's Run
20REM By Stuart Bain
30REM (c) Electron User
40PROGbit
50ONERRIFERR<>17MODE6:PRINT:
REPORT:PRINT" at line ";ERL:DSCLI
"FX21":END
60REPEATMODE4:VBU23,1,0,0,0,0;
19,0,4,0,:PROGstart
70MODE5:VBU23,1,0,0,0,0,19,1,5
,0,17,2:PROGover
80REPEATPROGscreen:[ALLmain]
90IF?dead=200PROGclear ELSEPRO
Cdead
100UNTIL?dead:PROGover
110MODE4:VBU23,1,0,0,0,0,19,0,4
,0,:PROGhigh:UNTIL0
120DEPPROCstart
130AZ=0:BX=0:CX=1:*FX210,0
140REPEATIFBXPROGtable ELSEPROC
options
150REPEATATIME=0:REPEATAZ=0:IFIN
KEY-99AZ=100ELSEIFINKEY-38AZ=1ELS
EIFINKEY-17AZ=2ELSEIFINKEY-82AZ=3

```

```

160UNTILAZORTIME>700
170IFAZ=0BX=1-BX:UNTIL1:UNTIL0
180IFAZ=1PROCinstr
190IFAZ=2CX=0:DSCLI"FX210,1":IF
BX=0PROCdb("on",11,13):PROCdb("0F
F",30,13):UNTIL0
200IFAZ=3CX=1:DSCLI"FX210,0":IF
BX=0PROCdb("ON",11,13):PROCdb("of
f",30,13):UNTIL0
210IFAZ=20RAZ=3UNTIL0
220UNTIL1:UNTIL2=100
230PROGtune("CCCCCEEEGEGGGGIDDDDD
G","444884448844874448"):REPEATU
NTIL2VAL(-6)=15
240ENDPROC
250DEPPROCOptions
260PROCheader:PROCwindow(3,6,34
,25)
270PROCdb("CONTROLS",13,13):PROC
db("Z - left.....X - ri
ght",1,4):PROCdb("Space - grenade
....Return - jump",1,7)
280PROCdb("P - pause on.....P
- pause off",1,10):IFCPROCdb("S

```

```

- sound ON,.....& - sound off",
1,13):ELSEPROCdb("$ - sound on...
...& - sound OFF",1,13)
290PROCdb("Escape - abort",10,1
6)
300PROCdb("Press 'I' for instru
ctions",4,19):PROCdb("Press Space
to start",7,22)
310ENDPROC
320DEPPROCinstr
330PROCheader:PROCwindow(1,8,38
,16):PRINTTAB(11,1)"The Story so
far"TAB(11,2)"-----"
340PROCsplit("Storker is the ch
ampion chosen by his village, and
he must protect it from the evil
forces attempting to conquer the
land. The dreaded giant hedgehogs
have banded with the deadly hawk
s in an all out attack.")
350PROCspace:PROCheader:PROCwin
dow(1,7,38,17)

```

Turn to Page 10 ►

From Page 9

360PROCsplit("Storker has been assigned an egg-stremely dangerous mission. There is an endless army of hedgehogs advancing whilst the hawk air patrols drop egg-bombs.")

370PROCsplit("However, Storker is equipped with egg-grenades, able to take out both the hedgehogs and the bombs.")

380PROCspace:PROCheader:PROCwindow(1,6,38,19)

390PROCsplit("To clear each screen, Storker must catch the required number of bugs which buzz around. Then he must run to the right edge of the screen.")

400PROCsplit("Touching hedgehogs or being hit by bombs weakens Storker. His strength is shown at the top. On completion of a sheet, a bonus will be awarded depending on the strength left.")

410PROCspace:ENDPROC
420DEFPROCvar
430SX=0;L1X=2;LEV=1;SP=244

440COLOUR2:PRINTTAB(0,27)STRING

\$(20,CHR\$226)TAB(0,7)STRING\$(20,C

HR\$224)

450GCOLO,1:MOVE0,136:V0U5:PRINT

STRING\$(100,CHR\$226):MOVE0,136:GC

LO,2:PRINTSTRING\$(100,CHR\$227)

460\$#110="Storker's Run":GCOLO

,0:V0U5:MOVE192,92:CALLdouble:MOVE

200,92:CALLdouble:MOVE192,88:CALLd

ouble:MOVE184,92:CALLdouble:GCOLO,3

:MOVE192,92:CALLdouble:V0U4

470XX=28;YX=1:CALLcalcX:datam

en2:XX=3;YX=24:CALLprintX

480PRINTTAB(0,17)"SCORE LEV:"TAB

(6,3)"EAT:"TAB(16,2)=""

490ENDPROC

500DEFPROCscreen

510:GX=0;LY=0;LHIT=0;LTIME2=82

85\$#80=1:TX=0

520:ADD=27600;LDATA=menX;XX=3;Y

X=24:CALLprintX;WX=0;IZ=24

530COLOUR1:V0U31,0,5,225,22

5:COLOUR2:PRINT;STRING\$(17,CHR\$22

5):COLOUR3

540:Bon=0;hx=8131C24:RESTORE63

0:FORIX=DT0(levX-1)M0010:READAS:N

EXT

550\$htot=VALMIDS(A\$,1,1)-1:bto

t=VALMIDS(A\$,2,1)

560FX=VALMIDS(A\$,3,1);TTDEC=VAL

MIDS(A\$,4)

570FORIX=DT0?htot?:TX=HX?IX:CAL

Lhopr:NEXT

580:HW=18:CALLhawpr

590PRINTTAB(10,1);SPC-(levX<10)

:LEVXTAB(11,5);FXTAB(18,2),LIZTAB

(0,3);RIGHT\$(“0000”+STR\$1,5)

600PROCdb("READY!",7,16):PROCde

l(100):PROCdb(" ",7,16):S00W

01,-15,80,2

610XX=0;YX=24;L0D=menX;TX=SP

620ENDPROC

630DATA11105,12105,12206,12307,

23208,22308,22408,32209,23410,334

11

640DEFPROCcClear

650PROCtune("NNNNNNNNNNNNNNNNNN",

“633763375555338”):PROCdel(100)

660\$dead=0;LFTIME2=260T0680EL

SEXX=0;YX=3;A\$=0:REPEATCALLbonus:

“FX21,5

670\$UND1,-15,150,1:\$X=SY+5:INX

=SX:CALLnumbX:PROCdel(10):UNTILd

ead:\$dead=0
680CALLcL0:LEV%1=LEV%+1:IF(LEV%
-1)MOD10=0?SP=1:SP=2*(TSP<254)
690COLOUR2:PRINTTAB(2,13)"Proce
ed to Level":COLOUR3:PROCdb(STRL
EVX,9,15)
700IF(LEV%1)MOD5=0:PROCdel(100)
:PRINTTAB(5,19)"BONUS LIFE":SOUND
1,-1,200,4:LIX=LIZ+1:PRINTTAB(18,
2):LIX
710PROCdel(200):CALLcL0
720ENDPROC
730DEFPROCdead
740\$OREX=DT015:YX=Y-1+2*(LXMOD
2):CALLbirdX:SOUND0,-15,5-1XMO02,
2:PROCdel(10):NEXT
750PROCdel(60):PROCtune("HIGHED
0","6453556")
760LIX=LIZ-1:LFLIX:\$dead=0
770PROCdel(200):CALLcL0:PROCde
l(60):ENDPROC
780DEFPROCover
790FDREX=1:T010:PROCdb(MIDS("GAM
E OVER",1X,1),4+1X,14):PROCdel(2
5):NEXT
800PROCtune("EEEEGG1FEED",“9739
7355739")
810PROCdel(200):CALLcL0:ENDPRO
C
820DEFPROChigh
830\$FSX<hx(4):GOTOP010
840IX=-1:REPEATIX=EX+1:UNTILSX>
hx\$(IX):FORIX=3T01RSTEP-1:hx\$(IX+
1)>hx\$(IX):hx\$(JX+1)=hx\$(JX):NEXT
:hx\$(IX)=SIX:hx\$(IX)=“
850PROCtable:PROCwindow(8,26,24
,4):PROCdb("Please enter your nam
e",1,1):V0U28,5,25,33,7
860:FX21
870AS=""1:REPEATBX=GET:IFBX>31AN
DBX<127ANDLEN(A\$)<10AS=A\$+CHR\$BX
880:FBX=127A\$=LEFT\$(A\$,LEN(A\$)-
1)
890PROCdb(LEFT\$(A\$," ",10),19,1
*3+1):UNTILBX=13
900\$IS=(IX)=A\$
910PROCtable
920PROCspace:ENDPROC
930DEFPROCtable
940CALLscr2:PROCwindow(8,1,24,4
):PROCdb("Storker's Fabulous-Five"
,1,1)
950PROCwindow(5,7,30,16):FDJX=

DT04:PROCdb(RIGHT\$(“0000”+STR\$hx
\$(JX),5)+"....."+hx\$(JX),
1,1+JX*3):NEXT
960ENDPROC

970DEFPROCtune(A\$,8\$)

980C\$=" CcDEFFGFGHJJKLMMNnOo
PQqRrSTTUu"

990FORIX=1:TOLEN(A\$):SOUND1,4,INST
8(C\$,MIDS(A\$,1X,1))“4,VALMIDS(A\$,
1X,1):SOUND1,0,0,0:NEXT

100DEFPROC

101DEFPROCsplit(A\$)REPEATIX=37:
REPEATIX=IX-1:UNTILMIDS(A\$,IX,1)=

"":JX=IX:REPEATIX=IX-1:UNTILMIDS

(A\$,IX,1)<"":PROCcent(LEFT\$(A\$,
IX)):A\$=MIDS(A\$,JX+1):UNTILLEN(A\$<
37:PROCcent(A\$)):ENDPROC

102DEFPROCcent(B\$)PRINTTAB(19-L
EN(B\$)/2,VP0\$+1);B\$:ENDPROC

1030DEFPROCwindow(X1,Y1,HX,VX)UD

U28,XX,YZ+VX-1,XZ+HZ-1,YX,12

1040MOVEXZ=32+4,1019-YZ*32:PL0T1

,H#32-12,0:PL0T1,0,-VX*32+12:PL0

71,-HZ*32+12,D:PL0T1,0,VX*32-12

1050PL0T0,4,0:PL0T1,0,-VX*32+12:
PL0T0,HX*32-20,0:PL0T1,0,VX*32-12

1060ENDPROC

1070DEFPROCdb(\$\$110,X1,Y1)CALLdo

ub2:ENDPROC

1080DEFPROCdel(A\$):TIME=0:REPEAT

UNTILTIME>A\$:ENDPROC

1090DEFPROCspace:PROCwindow(3,2
7,14,4):PROCdb("PRESS SPACE",1,1
):REPEATUNTILINKEY=99:ENDPROC

1100DEFPROCheader:CALLscr2:PROCw

indow(12,1,16,4):PROCdb("STORKER"
S RUN",1,1):ENDPROC

1110DEFPROCinit

1120V0U23,224,0,240,255,255,255,

255,0,0,23,225,102,102,102,10

2,102,102,102

1130V0U23,226,85,170,85,170,85,1

70,85,170,23,227,170,85,170,85,17

1140ENVELOPE1,1,0,0,5,0,5,20,126

,0,0,-126,126,126,126,126,126,12

6

1150ENVELOPE3,2,-3,0,0,50,0,0,12

6,0,0,-126,126,126,126,126,126

1160D01M02T790,his(5),his(5):FORI

X=DT04:his(1X)="Rainy Soft":his(1

X)=15-12)*1000:NEXT

1170RESTORE2240:menX=8900:FORIX=

0T04B7:READmenX:EXT:egx=menX

+285chdat=menX+304:bdat=menX+368:

fly=menX+392

1180add=870:old=872:old=874:gx=

876:gy=877:gd=878:gre=879

1190pu=878:go=878:dir=877:anim=8

70:hit=878:IFINKEY=256=1ti=8295 E

LETS=8240

1200dead=877:fgot=880:last=881:ro

=882:col=883:hx=884:btot=887:bo

=888:tr=889:hw=88A:bx=888:by=88E

:b\$=891:btot=894:bco=895

1210timeX=860:teo=863:tdec=864:t

=865:fon=866:fcu=867:nu=868:sp=8

4C

1220tab=8150:FORIX=DT0271:!(tab+1

)*2=8580+8140*JX:NEXT

1230FORIX=DT02STEP2:PX=82

1240E0PTIX

1250:CALLLDAA0D:STAadd+1:STXadd:

LDX#3:ca2:ASLadd:R0Ladd+1:DEX:BN

Eca2:TYA:ASLA:TAY:LDAAadd:R0Ctab,Y

:STAadd:LDAAadd+1:ADCtab+1:Y:STAadd

+1:RTS

1260:PRINT\$STXrow:STYcol:LDX#0

1270:02:LDY#0:.p3:LDA(data),Y:E0

RAadd),R:STA(add),Y

1280INT:CPYcol:BNEp3:CLC:LDAdd:

ADC#40:STAadd:LDAdd+1:ADC#1:STA

add+1

1290CLC:LDAdd:ADC#0:STAadd:LDAdd:

ADC#1:ADC#0:STAdata+1

1300INX:CPXrow:BNEp2:LDXrow:LDY

0:RTS

1310:birdLDAAold:STAdata:LDAdd+

1:STAdata+1:LDX#45C:LDY#46B:JSRc8

l:cx:LDX#3:LDY#24:JSRprint3

1320LDAAmenX#00256:STAdata+1:LDAdir:BEQp1

:CLC:LDAdata:ADC#144:STAdata:LDAd

ata+1:ADC#0:STAdata+1

1330:mp1:LDAanim:EQR#72:STAanim:

CLC:ADCdata:STAdata:LDAdata+1:ADC

#0:STAdata+1

1340LDAdata:STAold:LDAdata+1:STA

old+1:LDX#460:LDY#464:STX#45C:STY

646B:JSRrealct:LDX#3:LDY#24:JSRpri

nt%:RTS

1350:grenLDAGre:CMP#200:BCSexpl

o:LDAgre:BNEng:LDAdir:BEAgrer

1360LDA#460:STAgs:CLC:LDA#464:AD

C#1:STAgy:LDA#1:STAgy:JMPmp1

1370:grer:LDA#460:CLC:ADC#2:STAga

y:LDA#464:ADC#1:STAgy:LDA#464:STAga

From Page 11

```

2050.dec:EQW10000:EQW1000:EQW
100:EQW10:EQW1
2060.count%10cto:LDAtco:CMPldec
:BEQban1:RTG:.bon1:LDAtco:STAco
2070.bonus:SEC:LDAtime8:SBCEB:ST
Atime8:LDAtime8+1:SBCEB:STA1me8+
1
2080LDAtco:LDY#7:.bon2:STA(time2)
,Y:DEY:BPLbon2
2090DECtime%2:LDAtime8+2:CMPl6:
BC8ban4:LDXAppep MOD256:LDY#peep
DIV256:JSRscu
2100.bon3:LDAtime8+2:BN8ban4:LDAt
#1:STAdead:.bon4:RTS
2110.doubXLDA#0:STA#70:LDAt31:JS
R&FFEE:TXA:JSR&FFEE:TYA:JSR&FFEE:
,d1:LDX#70:LDAt10,X:CMPl3:BEQb3
:STA#71:INX:STX#70
2120LDX#71:LDY#0:LDAt10:JSR&FFF
1:LDY#1:LDY#0:.d2:LDAt71,X:STA&CF
0,Y:INY:STA&CF0,Y:INY:INX:CPX#9:B
NED2
2130LDAt254:JSR&FFEE:LDAt8:JSR&F
FEE:LDAt10:JSR&FFEE:LDAt255:JSR&F
FEE:LDAt11:JSR&FFEE:JMPd1:.d3:RTS
2140,clexLDAt255:STAdata:JSRclpr
:LDAt0:STAdata
2150,cLpr:LDY#0:.cL2:LDAt0:STAad
d:LDAt#62:STAadd+1t,.cL3:LDAtdata:S
TA(add),Y:CLC:LDAadd:ADC#8:STAadd
:LDAtadd+1:ADC#0:STAadd+1
2160CMPl#879:BNEcL3:LDAtdata:CMPl#8

```

```

0:BNEcL3:INY:CPY#8:BNEcL2:RTS
2170,scxLDAt#17:STAdata:LDY#0:.s
c1:LDAt#58:STAadd+1:LDAt0:STAadd
,scx:LDAtdata:STA(add),Y:CLC:LDAad
d:ADC#4:STAadd:LDAadd+1:ADC#0:STA
add+1:CMPl#80:BNEc2:STAdata:INY:
CPY#4:BNEc1:RTS
2180.peep:EQW#3:EQW#15:EQW#140:
EQW#1
2190,s1:EQW#1:EQW#100:EQW
5
2200,s2:EQW#1:EQW#2:EQW#30:EQW#2
2210,s3:EQW#1:EQW#3:EQW#40:EQW#3
2220,s4:EQW#1:EQW#15:EQW#4:EQW#4
3
2230:NEXT:ENDPROC
2240REM Stork right
2250DATA 0,0,0,0,0,0,0,128,16,48
,48,48,16,16,16,112,128,192,67,19
2,128,0,0,128
2260DATA 208,240,96,48,16,0,0,0
,240,112,224,80,176,224,4,4,128,12
8,128,128,0,0,0
2270DATA 0,0,0,0,0,0,0,0,4,4,8,8
,5,4,4,10,0,0,0,0,0,0,0
2280DATA 0,0,0,0,0,0,0,144,16,48
,48,48,16,16,48,128,193,66,193
,128,0,0,128
2290DATA 176,208,96,48,16,0,0,1
,176,208,224,240,240,224,12,4,128
,128,128,0,0,0
2300DATA 2,4,4,2,1,2,0,0,4,4,4,2
,2,9,0,1,0,0,0,0,0,8,4
2310REM Stork left
2320DATA 16,48,44,48,16,0,0,16,1
28,192,192,192,128,128,128,224,0
,0,0,0,0,0,16
2330DATA 16,16,16,16,0,0,0,0,240
,224,112,160,208,112,2,2,176,240
,96,192,128,0,0,0
2340DATA 0,0,0,0,0,0,0,0,2,2,1,1
,2,2,2,5,0,0,0,0,0,0,0,0
2350DATA 16,56,36,56,16,0,0,16,1
28,192,192,192,128,128,128,192,0
,0,0,0,0,0,144
2360DATA 16,16,16,16,0,0,0,0,208
,176,112,240,240,112,3,2,208,176
,96,192,128,0,0,8
2370DATA 0,0,0,0,0,0,1,2,2,2,2,4
,4,9,0,8,4,2,2,4,8,4,0,0
2380REM Egg
2390DATA 0,0,0,0,0,102,255,255,102
,68,153,37,128,43,68,23,142
2400REM hog
2410DATA 0,0,0,0,0,0,0,0,0,0,0,0
,0,1,2,5,0,0,0,10,5,10,5,0,0,0
,0,8,4,10,5
2420DATA 0,0,17,34,63,63,0,0,10
,141,238,255,221,139,6,12,10,5,10
,255,255,255,0,0,10,5,208,239,174
,6,3,1
2430REM Hawk
2440DATA 0,136,238,255,119,0,0,1
,111,159,102,255,255,9,6,0,17,1
,19,253,238,0,0,8
2450REM Bug
2460DATA 68,238,238,103,1,1,2,0
,34,119,119,110,8,8,4,0

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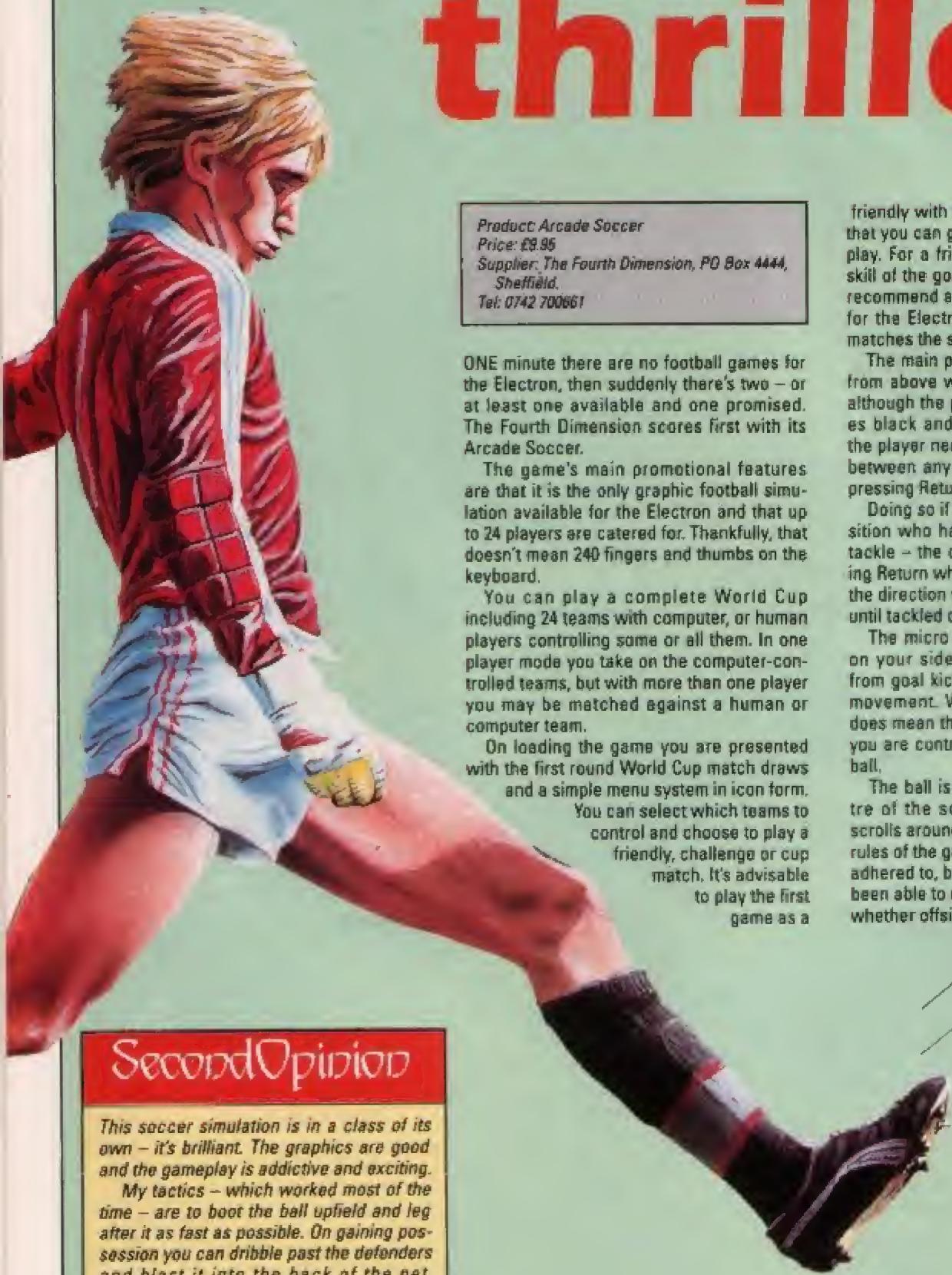
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World Cup thriller



Product: Arcade Soccer
Price: £9.95
Supplier: The Fourth Dimension, PO Box 4444, Sheffield.
Tel: 0742 700661

ONE minute there are no football games for the Electron, then suddenly there's two – or at least one available and one promised. The Fourth Dimension scores first with its Arcade Soccer.

The game's main promotional features are that it is the only graphic football simulation available for the Electron and that up to 24 players are catered for. Thankfully, that doesn't mean 240 fingers and thumbs on the keyboard.

You can play a complete World Cup including 24 teams with computer, or human players controlling some or all them. In one player mode you take on the computer-controlled teams, but with more than one player you may be matched against a human or computer team.

On loading the game you are presented with the first round World Cup match draws and a simple menu system in icon form.

You can select which teams to control and choose to play a friendly, challenge or cup match. It's advisable to play the first game as a

friendly with the speed reduced to Slow so that you can get used to the keys and game-play. For a friendly you can also adjust the skill of the goalies – to make sure you win I recommend a rating of nine for you and zero for the Electron. In the challenge and cup matches the skill is chosen at random.

The main play area, in Mode 5, is viewed from above with shirts either white or red, although the player who is on the ball flashes black and white. Normally you control the player nearest the ball, but you can flick between any of your players on screen by pressing Return.

Doing so if he is close to one of the opposition who has the ball results in a sliding tackle – the only type you get – and pressing Return when you have the ball kicks it in the direction you are facing. You can dribble until tackled or kicked.

The micro controls all the other players on your side, including the goalie. Apart from goal kicks you don't get to control his movement. While this works quite well it does mean that you can't change the player you are controlling while the goalie has the ball.

The ball is large and stays near the centre of the screen while everything else scrolls around it. All the obvious rules of the game are being adhered to, but I haven't been able to establish whether offsides are



Second Opinion

This soccer simulation is in a class of its own – it's brilliant. The graphics are good and the gameplay is addictive and exciting.

My tactics – which worked most of the time – are to boot the ball upfield and leg after it as fast as possible. On gaining possession you can dribble past the defenders and blast it into the back of the net. Recommended for all football fanatics.

Roland Waddilove

included. It is possible to play through the World Cup very quickly using the one minute each way option (it seems more like 45 minutes when you're getting thrashed 9-0 by the computer).

You can opt for up to five minutes each way if you prefer a longer game. Everything runs just as it should with first and second round eliminations, semis and final.

If you are playing on your own I would advise not trying to run more than one team as you might end up playing against yourself! Only the full time scores are shown when two computer controlled teams play each other, so you don't have to sit through every match.

Under the challenge option you play each team in turn until you lose. I haven't managed to progress very far, so I can't say what awaits the winner.

The graphics are as good as they could be, with garbage overwriting the top and bottom of the screen above and below the playing window. The sound is limited to a whistle, a ball against boot kicking effect and frying chips cheering and applause. You can switch off the sound, but I didn't find it annoying enough to use that option.

The game is very playable and you get a feeling of real involvement as you knock the ball into the corner of the net straight past the diving goalie. It's definitely one to play again and again, and if you can gather together enough friends it could make for a good day's enjoyment – and not a lot of games can do that.

Janice Murray

Sound	5
Graphics	9
Playability	10
Value for money	9
Overall	9



Arcade Soccer is the first Electron football game to feature graphics



The World Cup fixture list and menu options

White Magic 2

Price: £9.95

Supplier: The Fourth Dimension, PO Box 4444, Sheffield. Tel: 0742 700661

HARD on the heels of White Magic comes the sequel. The new game hardly differs from the original apart from a slightly modified title screen and the addition of a screen designer.

You get 32 new levels to play and pretty tough they are too. After a full day's play I only got to the fourth one. Still they are not so difficult that they discourage you from playing on.

The sound and graphics are all exactly the same as the previous version which means they're top quality backgrounds and characters and the sprites still resemble and move like the ones in *Ravenskull*.

However, the screen designer is what *White Magic 2* is really all about. It is loaded separately and is stored after the game but before the first level on the tape. You are presented with the majority of the screen blank, a scrollable window containing the available icons, two areas showing the piece of scenery under the pointer and the other containing the currently selected one.

To create a level you just paint over the blank area. The Z, X, : and / keys move the cursor, while A, S, P and L are used to choose an icon. Return places an icon on the screen and Delete erases it. The manual I used was only the draft version, but I did take heed of the warning that the border must contain solid characters. You needn't worry however, as the editor has fairly extensive error checks which include examining the border, ensuring there is a trap-door and master key.

Of course, what it can't do is check that the level can be completed – the overall design is up to you. It's very simple to just sit down and start creating, but the size of the screen is huge and designing puzzles

DIY magic

requires a little forethought.

My first screen was a lovely symmetrical affair with the start in the bottom left and the end in the top right. However, when I came to play test it I had my first introduction to the less friendly aspects of this software.

The start position must be within a small area in the top left of the screen. So much for my clever design – and no there isn't a

rotate option. Then there's a whole series of questions about what to call the level, the time limit, where the teleports transport to and, finally, you're told what the edit code is – essential if you want to re-edit at a later date.

What's really annoying is that this happens every time you want to try out your creation. Why there couldn't have been another menu option to enter these details just once I really don't know – after all, the rest of the editor is well designed.

Anyway I went back to the drawing board and designed a whole new level which worked exceedingly well, if I do say so myself. There are a great number of factors which control how to design a screen but you learn these through experience. A devious mind also helps.

Lazarus

Sound	5
Graphics	10
Playability	10
Value for money	9
Overall	9



A level designer and 32 new screens provide the entertainment



Second Opinion

Unless Superior can produce a new block buster pretty quick the Repton fan club will soon be turning its attentions to *The Fourth Dimension's White Magic I* and *II*. The sequel to the original arcade adventure includes 32 new levels plus a screen designer.

The editor is well equipped and easy to use, so when you've mastered the 32 levels supplied you can try your hand at designing your own and swap them with friends. Recommended.

Roland Waddilove

Neil Fawcett examines the new LSP-100 Epson compatible printer

THE LSP-100 bi-directional dot matrix printer is Citizen's latest addition to an already impressive range of products. As with most printers, you have the option of friction or tractor feed and this can be selected easily by moving a lever on the top right of the casing.

You also have the option to load paper from underneath the printer using a process called bottom-feeding (as seen in Figure 1). Loading paper this way can only be done when your printer is mounted on a stand.

The tractor feed mechanism must be attached to the printer and you must use



A pretty solid Citizen

continuous stationery. Loading paper is just like setting the tractor feed up, except the paper comes from underneath.

On the front right side of the printer are three buttons controlling the online status, form feed and line feed.

The printer must be brought offline before the feed buttons will work – rather annoying, but this is the case with several printers. Next comes a panel with three small lights – power, paper out and ready.

The DIP switches are easy to access: You simply switch the printer off and remove a cartridge-style interface located on the right of the printer as you look at it. You can then alter the switches to suit your micro. Instructions on how to do so are very well documented in the manual.

The printer is Epson-compatible and it is also switchable to IBM-compatible.

The LSP-100 is an 80 column printer and the print head has nine pins which are used to give you a 9 x 9 matrix.

When used in NLQ mode a double pass of the head allows the matrix to change to 17 x 17 and this gives you a wide variety of styles and typefaces.

The print speed is 150/175 characters per second (cps) at 10/12 characters per inch (cpi) in draft mode and 40 cps in NLQ mode. Now that is quite a mouthful, but it gives you an idea of the capabilities of this machine.

It is interesting to note that although this is quite a fast printer it is also very quiet. Even when doing a screen dump I could still manage to concentrate on other work while it was churning away.

There is a built-in 4k buffer – very useful indeed, as it allows you to continue working on your micro as the printer does its work.

However, there is a snag with the large buffer – there isn't a flush button. So, if you make a mistake you have to wait until that large 4k buffer empties. Alternatively you can turn the printer off.

Fitting the cartridge type ribbon poses no problems. It's claimed to last for two million characters – but I didn't have time to test this.

The LSP-100 has a sleek modern look and

is surprisingly compact when you consider that it does some tasks that printers twice its price can't.

The manual is well presented and easy to read with plenty of diagrams showing things like fitting the ribbon and so on.

This is a superb printer, well priced and should satisfy the needs of most homes and small businesses.

Specifications

- 150/175 cps at 10/12 cpi in draft and 40 cps in NLQ
- Epson and IBM compatibility
- Parallel interface standard
- Tractor feed and friction feed
- 4k buffer
- 8 bit graphics capabilities
- Downloadable characters
- More than 400 print styles
- Automatic sheetfeeder available
- Bottom-feed paper loading option

Product: Citizen LSP-100 printer

Price: £286.35

Supplier: Citizen Europe, Wellington House, 4-10 Cowley Road, Uxbridge, Middlesex UB8 2XW.

Tel: 0895 72621

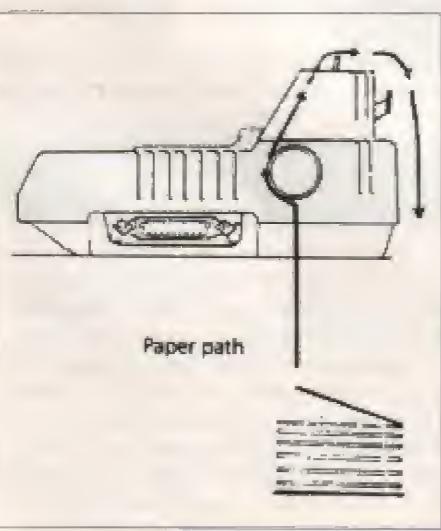


Figure 1: Loading the printer using bottom-feeding

THE chill in the wind tells me that winter is creeping in and soon the bonfires will once more be lit to guide my knights back to Camelot. It will not be long before we will sit around the flames and recount tales of our adventures both new and old. What more can a king ask for than a trusty steed, a band of dour and loyal knights and an expanded Electron, on which to battle during the winter.

No new releases to report this month, but with a back catalogue of more than 500 Electron and Electron-compatible BBC Micro text adventures, you are hardly ever likely to be bored or stuck for a quest to endure.

While on the subject of back catalogues, I have copies of Special Operations (1984) and the original Magus version of Village of Lost Souls (1985) to give away to senders of the first full solutions I receive to Acornsoft's Quondam and Gateway to Karos.

Next time you are in a bookshop try to

Adventures

By Pendragon

find a tome published by Penguin called *The Soul of a New Machine* by Tracy Kidder. The tale is about the design of a new computer way back in 1979, and describes the author's introduction to Crowley and Woods' Adventure.

If you want to know what adventuring is all about I suggest you turn to page 82 of this book and start reading! Old hands will recognise the scene straight away, and you can cut the atmosphere with a knife – it

really is superb stuff.

This month's featured map is of the opening scenario to Epic's age old classic, Castle Frankenstein. I hope this will help adventurers who may still be stuck at the outset of this beautiful gothic romp.

Next month I continue this popular series with a guide to the openings to Riverdale's American Suds.

● *So until the frost forgets to bite, happy adventuring.*

Winter bon

Readers' Hall of Fame

Plane Crash James Farmer

You begin trapped in your seat harness in the cabin of the crashed plane. To free yourself, you must LOOK and get the bag. Open it, get and open the shaving kit. Get the razor and cut the harness.

You must now deal with the fire. LOOK and take the extinguisher. Examine it, read the instructions and pull the pin, point the extinguisher at the fire and pull the lever to extinguish it. Open the door to avoid choking on the smoke.

Now go to the galley and examine the shelves. Ignore the beads, but take the survival pack and open it. Open the cupboard, take the box and open it. Take what you find and push the door with the extinguisher. Go out of the door, examine the pilot, examine his pocket and take the compass.

To get out, you must smash the windscreen with the extinguisher, clear the glass with the extinguisher and GO WINDSCREEN.

Go NORTH and put the spider in the box. Now LOOK and get the wood. Go EAST twice and open the box. Go WEST and LOOK. Keep looking until the light begins to fail. Then OPEN WOOL, DROP WOOL and drop the wood. Light a fire, then go EAST and sleep.

When you wake, go WEST, WEST, SOUTH, SOUTH, EAST, EAST, EAST and

cross the river. You will now be in part two of the game. This part is set mainly in a jungle maze. You will be trapped in a hut and must act quickly to free yourself as the headhunters plan to sacrifice you to their god.

You must LOOK and get the grass, then light a fire and GO WALL. Now travel WEST, NORTH, NORTH, NORTH, LOOK, WEST, LOOK, EAST, EAST, EAST and examine the bush. Get the berries and go WEST twice. Now go SOUTH, SOUTH, SOUTH, EAST, EAST, EAST, NORTH, NORTH, WEST and EAT K RATIONS.

LOOK and TIE HOOK TO LINE. Bait the hook and CATCH FISH. Take the fish before going EAST, SOUTH, SOUTH, WEST, WEST, WEST, NORTH, NORTH, NORTH, NORTH, WEST, WEST, WEST, SOUTH, WEST, SOUTH to the clearing. Now LOOK and take the wood.

Go SOUTH and drop the grass and wood. Go SOUTH again and examine the ferns. Then go NORTH, light a fire, then cook and eat the fish. Now go SOUTH and sleep.

When you wake go NORTH and EAST twice, milk the goat and drink the milk. Go WEST, WEST, SOUTH, EAST, SOUTH, SOUTH, EAST and JUMP. To save yourself you must pull the handle and grab the dinghy. Now CLIMB DINGHY, GET OARS and ROW DINGHY. To finish the game, CLIMB STAGE.

Acheton

Bob Purder

Due to the massive size of this adventure, this solution will be serialised in many parts during the next few months.

Go into the house and collect the lamp, keys, bottle and paint. Now go and unlock the gate. Venture into the caves, turn your lamp on and get the casket. Visit the cloakroom, open the casket, take the coat and drop the casket. Now visit the Zooroom and get the sapphire, sail and thread. Go to the Slabroom and drop all but the lamp and sapphire.

Go EAST and get the marble. Journey to the giant's prison via the star room. Get the plate and beryl and throw the marble as the giant approaches. Take the opportunity to get the crown, go to the star room and turn off your lamp. Now drop the beryl, sapphire and zooge and turn the lamp on.

Go to the orb and drop the crown. Now go to the slab, drop the marble and plate and take the keys. Now enter the stockroom and take the manacles.

You must now visit the tomb room and dig. Take the pearls, throw the manacles, take the dagger to the star room and drop it. Collect the ebony, pillow and matches. Go to the fissure, DROP ALL, JUMP, TAKE VIOLIN and JUMP again. Now TAKE ALL including the mace. (Continued next month)

Overture and Beginners

Since I started this section of the adventure column almost three years ago, many readers have written in asking when particular aspects of text adventuring have been covered.

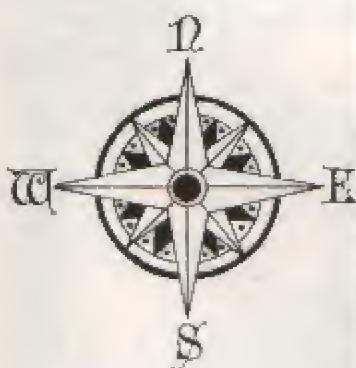
So to placate all you diehards and novices, here is a run down of the itinerary to the beginners' help section since it began in December 1986.

*Setting out: December 1986/January 1987
Mapping techniques: February 1987-April 1987*

*Adventure logic: May 1987/June 1987
Mazes: July 1987/August 1987
Problem solving: September 1987/October 1987*

*Glossary of adventuring terms: November 1987-May 1989
Producing atmosphere: June 1989
Collecting and utilising objects: July 1989
Riddles and puzzles: September 1989
Adventure parsers: October 1989*

fires



Problems Solved

This month I continue with help in what is in my opinion the most difficult adventure ever to be released for the Electron. What follows should guide you through the strange lands upon which *The Ferryman Awaits* is built.

Well: This is a short cut to the tunnel west of the mud lake. After the rock fall the well is filled with rubble.

Mud lake: You can go South East to the bay and the tunnel after the fungus has grown.

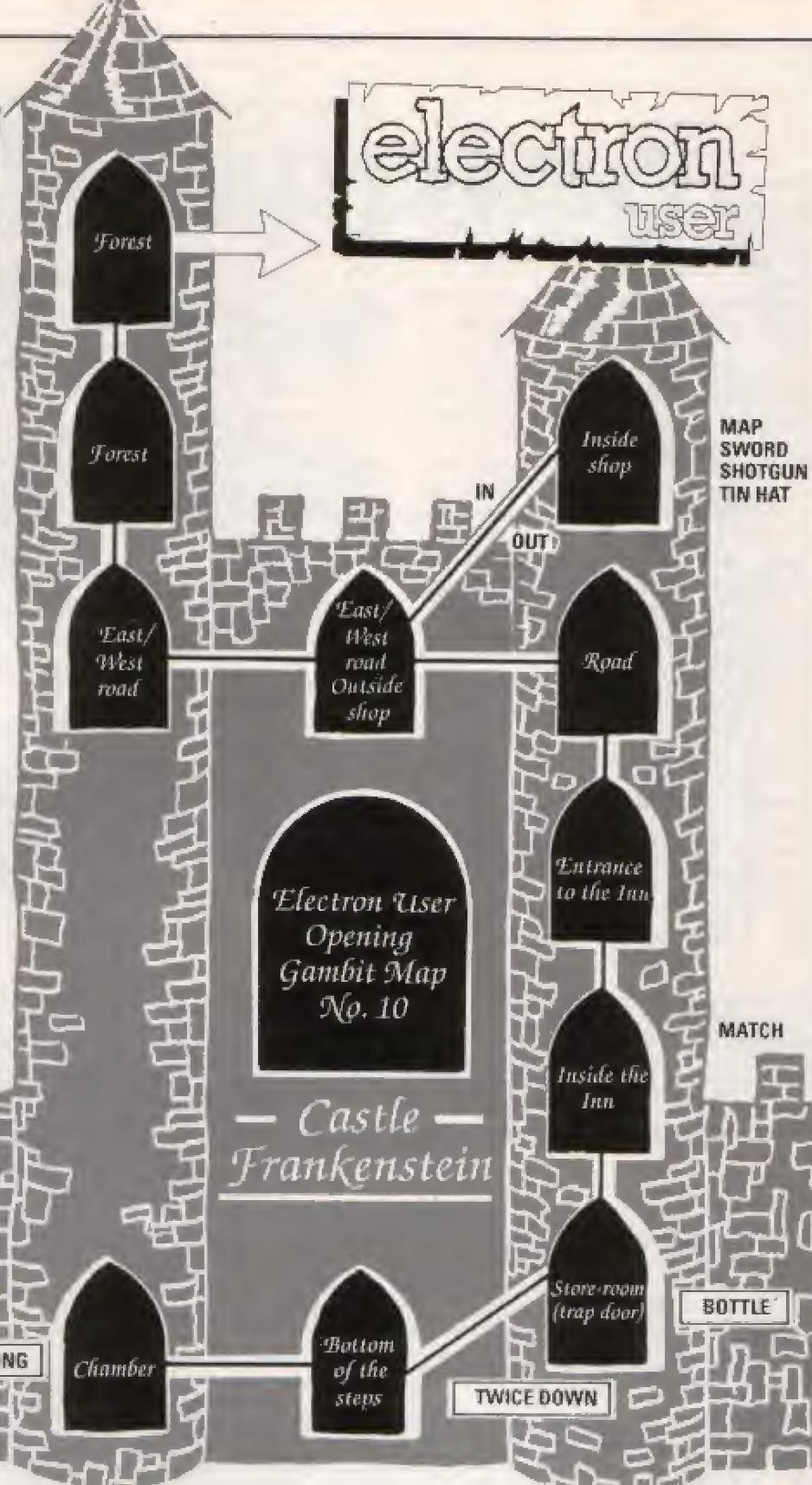
The level rises after the roof has been brought down. Then you can cross North to the dark opening and collect the cube.

Stairway: To reach the top leading to Agrogorggan's lair you must create a mist so the archers can't see to shoot.

Gap: DROP DOOR at the west end of the ledge in the tunnel running West from the lake. LOOK reveals the bar.

Gravel slope: At the bottom DIG, which moves you several locations down river and uncovers a lump of sulphur - revealed only

electron user



after returning there. At the top, drop or THROW BAR to fix the slope to be climbed.

Temple: Reached by going West then North West from the Guardroom. EXAMINE STATUE reveals that it is movable.

Roof of tower: Enter the gap by the statue, THROW BAR and climb the rope which hangs from the hand.

Balcony: Reached by going along the ledge

Turn to Page 20 ▶

◀ From Page 19

North East from the gap.

Desert: Go South East across the lake as far as possible, then East. Use the hat to get to the gully. Travel North, South, East, West, East, East to reach the river South of the tower.

Sandstone gully: The horn is here. You will also find any object dropped in the desert.

Stone bridge: Go from the desert to the south end of Tower Bridge. NORTH WEST triggers a semi-automatic sequence to the North-South gully. Move to the gully below the stone bridge, then go up.

Mist-filled hollow: EAST from the stone bridge. Examine the mist for a vision of the tower. WEAR HAT transports you to South of the bridge. Objects dropped here disappear.

Stone tree: WEST, SOUTH WEST, EAST from the stone bridge. An old man in the branches exchanges the rod (magic wand) for chalk with which you draw the pentagram.

Rock chamber: Drop the horn here. A glowing pentagram is then seen: SAY DEATH, TIME, AGROGORGAN and NAGGROGOGA to conjure them up briefly. After the waiting room time lapse this has a different effect.

Valley of the shadow of death: DRINK and examine the mirror which shows you are now one of the living dead and immune to the guards' spears, Agrogorggan's burning eye, rock falls and so on.

Windswept plain: Use the hat to reach the circle of stones and the jerkin - objects dropped on the plain turn up here.

Pirate cave: Go North West from the beach. You must be wearing the tricorn hat, jerkin, boots and carrying the parrot and keg of rum. Take an inventory and it will show that the keg has been exchanged for a sticky lump of tar.

Rock fall in tunnel: Return to the Tower, go South East across the lake and through the tunnel to the section with the cracked roof.

SAY MORVELL and the sword explodes, bringing down the roof. Escape from the crack in ground with the horn by SAY MOLD.

Mud lake: Back to the tower. You can't descend the stairway as the level of the lake has risen, but you can now go North

across the pumice blocks to the dark opening.

Dark opening: Leads to the chamber where you find the cube. You must wear the boots, or the roof caves in.

Waiting room: In the temple. Waiting is fatal unless you are one of the living dead. LICK CUBE and it brings horrifying visions, and eons of time pass by. EXAMINE MIRROR shows a skull-like face. LOOK and the slab has cracked.

Hall of black marble: WEST from the top of staircase. Horned demons guard the entrance NORTH to Agrogorggan's lair. They can be killed with the magic sword but then the roof can't be brought down in the tunnel. Wear the robe and carry the scythe and they draw back in fear.



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EXCLUSIVE



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Shopping Spree

SHOPPING Spree is a text adventure game in which you take the part of a 12-year-old boy who is shopping for Christmas presents for his family. They are a fussy lot and very difficult to please, which makes your task all the more frustrating.

You start out in the High Street and can enter any of the shops you see there. Many potential presents will catch your eye, but you must choose wisely as you have only £15 to spend on your mother, father, sister and pet dog. Watch out for thieves who may steal your bag, and don't give away your money to strange beggars. Or perhaps you should, for they may do you a good turn when you desperately need help.

Take care to buy the correct present for each member of your family as they will be very ungrateful and angry if you don't. What a miserable lot, and in the festive season too!

A quick run down on your family will help you choose the right presents: Your mother is middleaged, a typical nagger. Quite knowledgeable about pop music, but still thinks we're living in the 60s. Your father is young and trendy, and is sure he is the

Christmas shopping crowds getting you down? Then try this simulation from Peter and Deborah Wood

greatest. He's quite generous. Sister is posh but bossy — likes to have her own way. She loves listening to Beethoven. The dog is affectionate but greedy, especially around meal times.

After buying all the presents you wait for Christmas Day, and when it finally comes round you hand them out. Did you buy the right ones, or are you sent to your bedroom for the rest of the day? Play Shopping Spree and find out...



```
10 REM Shopping Spree
20 REM By Peter & Deborah Wood
30 REM (c) Electron User
40 VDU 23,255,0,24,36,66,126,1
26,126,126
50 MODE 6
60 VDU 19,1,2,0,0,0
70 CLS
80 PRINT TAB(11,1)"SHOPPING SPREE"
90 PRINT TAB(0,2); "By Peter &
----- Deborah Wood"
100 PRINT TAB(0,3);
110 FOR A=0 TO 39
120 VDU 255;:NEXT
130 PROCINST
140 END
150 DEFPROCINST
160 FOR X=0 TO 38:PRINT TAB(X,2
4);CHR$(255);
170 NEXT
180 VDU 28,0,23,39,6:
190 PRINT TAB(12,0)"INSTRUCTION
S"
200 PRINT
210 PRINT "It is very near to C
hristmas and it is now time to g
```

o on your yearly shopping spree, buying gifts for your family."

220 PRINT "You have £15 to spend in all the shops visited. Sounds easy, but, your family are very difficult to buy for and are certainly not afraid of speaking their minds when it comes to Christmas presents."

240 PRINT

250 PRINT "THE BRIEF SUMMARY GIVEN OF EACH PERSON WILL HELP YOU DECIDE WHAT TO BUY."

260 PRINT "YOU ARE ALSO TIMED, STARTING WHEN YOU PRESS SPACE"

270 PRINT TAB(10,18); "HAPPY SHOPPING!..."

280 PRINT TAB(12,19)"PRESS <SPACE>"

290 REPEAT

300 KEYS=INKEYS(1)

310 UNTIL INKEYS()=99

320 PROC1

330 ENDPROC

340 DEFPROC1

Turn to Page 22 ▶

```

350 CLS
360 M=0
370 TIME=0
380 MONEYX=1500
390 CASE2=0
400 EARX=0
410 MUGZ=0
420 M=0
430 B=0
440 S=0
450 X=0
460 R=0
470 BONEX=0
480 PRINT:PRINT"**"
*****":PRINT
490 PRINT "You are standing in
the square, and you can see two
shops, NEXT and WHSMITHS. NEXT
has a large sale sign in the window
but you spot a particularly lovely
pencil case in the window
of WHSMITHS, in beautifully
500 PRINT "complimentary flowers
ent pink and green."
510 PRINT:INPUT "DO YOU GO INTO
SMITHS OR NEXT?(S/N)?"A1$-
520 IF A1$="S" PROC2
530 IF A1$="N" PROC3 ELSE PRINT
": PRINT "INPUT-NOT ACCEPTABLE...."
..:GOTO 510
540 ENOPROC
550 DEFPROC2
560 PRINT:PRINT"**"
*****":PRINT
570 PRINT
580 PRINT "You enter SMITHS and
inquire about the cost of the
pencil case, and find it is
particularly expensive-£5.50-can you
afford it? Remember you still have
three presents to buy."
590 PRINT:INPUT "DO YOU BUY THE
PENCIL CASE(Y/N)?"A2$-
600 PRICEX=550
610 IF A2$="Y" PROCBUY
620 IF A2$="Y" AND R=1 PROC4
630 IF A2$="N" OR A2$="T" AND R
=0 PROC5 ELSE PRINT"INPUT-NOT AC
CEPTABLE....":GOTO 590
640 ENOPROC
650 DEFPROC3
660 PRINT:PRINT"**"
*****":PRINT
670 PRINT "You've seen it, the
bargain of the century, but
it's over at the other side of the
shop! You see several people
moving towards the earrings (£4.5
0) which you know will suit your
sister."
680 PRINT:INPUT "DO YOU MAKE AN
EXHIBITION OF YOURSELF BY RUNNING
ACROSS THE SHOP(Y/N)?"A3$-
690 IF A3$="Y" PROC8
700 IF A3$="N" PROC10
710 ENOPROC
720 DEFPROC4
730 PRINT:PRINT"**"
*****":PRINT
740 CASE2=1
750 PRINT "You are our millionth
customer in our new store" say
s the cashier. You can have a £2.50
gift voucher. You feel a little
hungry."
760 PRINT:INPUT "DO YOU BUY A B
OX OF SWEETS TO EAT-THOSE CREAM F
ILLED ONES YOU REALLY ADORE(Y/N)?"A4$-
770 IF A4$="Y" PROC6
780 IF A4$="N" PROC7 ELSE PRINT
": PRINT "INPUT-NOT ACCEPTABLE...."

```

SHOPPING SPREE

By Peter & ----- Deborah Wood

You enter SMITHS and inquire about the cost of the pencil case, and find it is particularly expensive-£5.50-can you afford it? Remember you still have three presents to buy.

DO YOU BUY THE PENCIL CASE(Y/N)?Y

'You are our millionth customer in our new store' says the cashier. You can have a £2.50 gift voucher. You feel a little hungry.

DO YOU BUY A BOX OF SWEETS TO EAT-THOSE CREAM FILLED ONES YOU REALLY ADORE(Y/N)?

```

..":GOTO 760
790 ENOPROC
800 DEFPROC5
810 PRINT:PRINT"**"
*****":PRINT
820 PRINT "Where next?-Exactly
NEXT. You have LOADSA MONEY
left, but lots of presents to buy
. But, as you come out of the
store, a rather distressed looking
female is asking if anyone
can lend";
830 PRINT "her £1 to make a ph
one-call as she has
forgotten her purse and must be back to w
ork in five minutes."
840 PRINT:INPUT "THIS SEEKS A L
OT OF MONEY FOR A PHONE CALL, B
UT DO YOU GIVE IT TO HER(Y/N)?"A5
$-
850 IF A5$="T" M=1 ELSE M=0
860 PRINT
870 PRINT"YOU NOW GO TO NEXT":P
ROC3
880 ENOPROC
890 DEFPROC6
900 PRINT:PRINT"**"
*****":PRINT
910 PRINT "You buy and eat the
sweets, and feel much better."
:PROC5
920 ENOPROC
930 DEFPROC7
940 PRINT:PRINT"**"
*****":PRINT
950 PRINT "You feel very hungry
, and begin to feel dizzy. The ne
xt thing you remember is a large
crowd peering down at you, and
your head hurts. Your cheeks are
a rather reddish colour and
you decide"
960 PRINT "your best option is
to return home as quickly as poss
ible.":PROCEND
970 ENOPROC
980 DEFPROC8
990 PRINT:PRINT"**"
*****":PRINT
1000 PRICEZ=450
1010 PRINT "A hand comes down on
your shoulder, it is the store

```

detective. 'Who do you think you ar
e, running like that.'

1020 IF M=1 PRINT "But it's the
Lady you helped earlier and sa
ys it is Ok, and goes and gets th
ear-rings for you to buy and ret
urns the pound she borrowed earlie
r."

1030 IF M=1 EARX=1 ELSE EARX=0
1040 PROC10
1050 IF M=0 PRINT "You are in de
ep trouble, 'Out of this shop i
mmediately,' she says."

1060 PRINT:PRINT"ANOTHER SHOP NO
W....":PROC10
1070 ENOPROC
1080 DEFPROC9
1090 PRINT:PRINT"**"
*****":PRINT
1100 PRINT "You just make it to
see someone else lift the ear
-rings off the shelf-had Luck,
Pal."

1110 PRINT:PRINT"ANOTHER SHOP NOW
....":PROC10
1120 ENOPROC
1130 DEFPROC10
1140 PRINT:PRINT"**"
*****":PRINT
1150 PRINT "You go out into the
precinct, and consider BOUT
S as your next choice-you enter
the shop."

1160 PRINT:INPUT "WHICH DEPARTME
NT DO YOU GO TO-RECORDS, HOUSEHOL
D OR PET ITEMS(R/H/P)?"A10\$-
1170 IF A10\$="R" PROC11
1180 IF A10\$="H" PROC12
1190 IF A10\$="P" PROC13 ELSE PRIN
T :PRINT "INPUT-NOT ACCEPTABLE.."
...":GOTO 1160
1200 ENOPROC
1210 DEFPROC11
1220 PRINT:PRINT"**"
*****":PRINT
1230 PRINT "As you make your way
to the record counter, you
notice a sign which says 'Buy a
ny 2 singles get one free.' Just
at this moment a small boy rushe

Here's how you can get the very best out of your Electron

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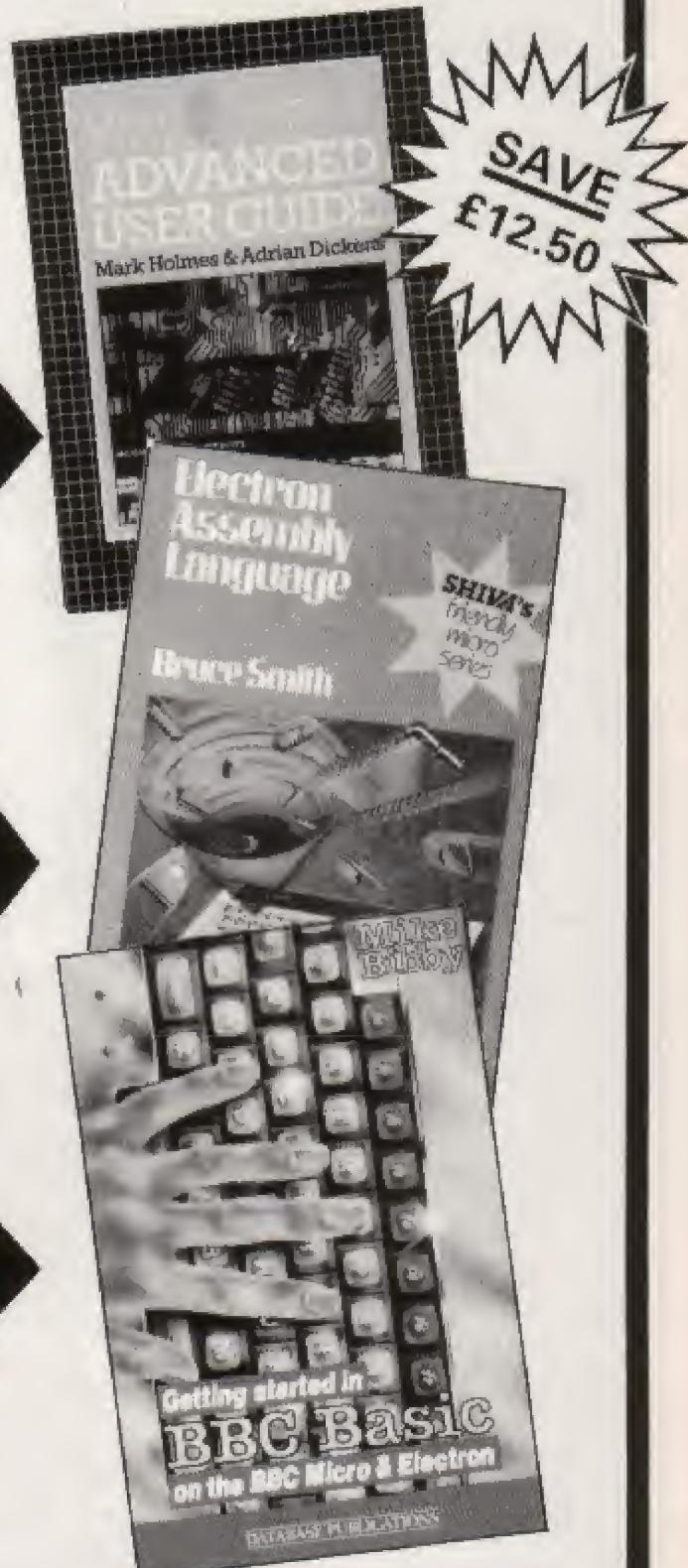
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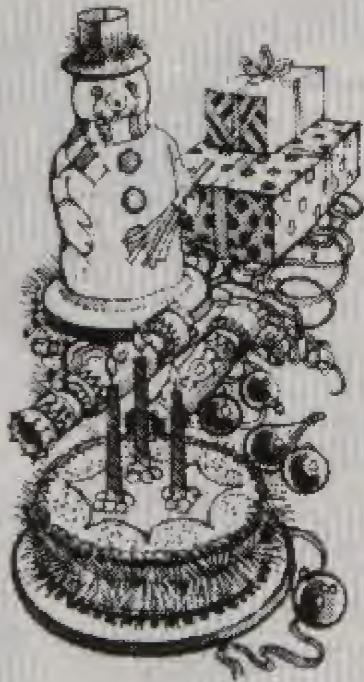


TO ORDER PLEASE USE THE FORM ON PAGE 45

From Page 22

6 past"
 1240 PRINT "and snatches your carrier bag, which contains your money."
 1250 PRINT:INPUT "DO YOU RUN AFTER HIM(Y/N)?":A115
 1260 IF A115="Y" PROC14
 1270 IF A115="N" PROC15 ELSE PRINT :PRINT "INPUT- NOT ACCEPTABLE.
":GOTO 1250
 1280 ENDPROC
 1290 DEF PROC12
 1300 PRINT:PRINT ***
 *****:PRINT
 1310 PRINT "In the household section, you find a set of mugs which are £4.50. They are beautifully designed, but can you afford them?"
 1320 PRINT:INPUT "DO YOU BUY THE MUGS(Y/N)?":A125
 1330 PRICEZ=450:
 1340 IF A125="Y" PROCBUY
 1350 IF A125="Y" AND R=1 PROC16
 1360 IF A125="N" OR A125="Y" AND R=0 PROC17 ELSE PRINT :PRINT "INPUT- NOT ACCEPTABLE....":GOTO 1320
 1370 ENDPROC
 1380 DEF PROCBUY
 1390 R=1
 1400 CHANGEZ=MONEYZ-PRICEZ
 1410 IF CHANGEZ < 0 PROCN0 ELSE MONEYZ=CHANGEZ
 1420 ENDPROC
 1430 DEF PROEND
 1440 R=0
 1450 PRINT "YOU DO NOT HAVE SUFFICIENT MONEY... SORRY ABOUT THAT."
 1460 ENDPROC
 1470 DEF PROC13
 1480 PRINT:PRINT ***
 *****:PRINT
 1490 PRINT "At the pet section you see a rather nice bone for 50p, but are apprehensive over whether it is enough for your beloved dog."
 1500 PRINT:INPUT "DO YOU BUY THE BONE(Y/N)?":A135
 1510 PRICEZ=50
 1520 IF A135="Y" PROCBUY
 1530 IF A135="Y" AND R=1 PROC18
 1540 IF A135="N" OR A135="Y" AND R=0 PROC19 ELSE PRINT :PRINT "INPUT- NOT ACCEPTABLE....":GOTO 1500
 1550 ENDPROC
 1560 DEFPROC14
 1570 PRINT:PRINT ***
 *****:PRINT
 1580 PRINT "You run after him shouting THIEF, and just manage to catch his jacket as he is about to leave the shop, and retrieve your money."
 1590 PRINT "An elderly lady can't thank you enough, as the boy had also stolen her handbag! She gives you £2 to say thank you."
 1600 MONEYZ=MONEYZ+200
 1610 PRINT:INPUT "WHERE NOW, THE HOUSEHOLD OR PET SECTION (H/P)?":A145
 1620 IF A145="H" PROC12
 1630 IF A145="P" PROC13 ELSE PRINT :PRINT "INPUT- NOT ACCEPTABLE.
":GOTO 1610
 1640 ENDPROC
 1650 DEFPROC15

1660 PRINT:PRINT ***
 *****:PRINT
 1670 PRINT "There is nothing for it but to return home with what you have. On your way out of the shop, you notice a commotion, and see the small boy has been caught, and your money is returned."
 1680 PRINT:INPUT "WHERE NOW, THE HOUSEHOLD OR PET SECTION (H/P)?":A145
 1690 IF A145="H" PROC12
 1700 IF A145="P" PROC13 ELSE PRINT :PRINT "INPUT- NOT ACCEPTABLE.
":GOTO 1680
 1710 ENDPROC
 1720 DEF PROC16
 1730 PRINT:PRINT ***
 *****:PRINT
 1740 MUGZ=1
 1920 BONEZ=0
 1930 PRINT:PRINT ***
 *****:PRINT
 1940 PRINT "You do not buy the bone. There is a nice pet store next door, so you go on to there. Here is a lovely box of dog biscuits-£2.50"
 1950 PRINT:INPUT "DO YOU BUY THE BISCUITS(Y/N)?":A195
 1960 PRICEZ=250
 1970 IF A195="Y" PROCBUY
 1980 IF A195="Y" AND R=1 THENPROC
 C21
 1990 IF A195="N" OR A195="T" AND R=0 PROC22 ELSE PRINT:PRINT "INPUT- NOT ACCEPTABLE....":GOTO 1950
 2000 ENDPROC
 2010 DEFPROC20
 2020 PRINT:PRINT ***
 *****:PRINT
 2030 PRINT "You now make your way to the sweet shop. Here is a lovely box of chocolates only £4.50"
 2040 PRICEZ=450
 2050 PRINT:INPUT "DO YOU BUY THE CHOCOLATES(Y/N)?":A205
 2060 IF A205="Y" PROCBUY
 2070 IF A205="Y" AND R=1 PROC23
 2080 IF A205="N" OR A205="T" AND R=0 PROC24 ELSE PRINT:PRINT "INPUT- NOT ACCEPTABLE....":GOTO 2050
 2090 ENDPROC
 2100 DEF PROC21
 2110 PRINT:PRINT ***
 *****:PRINT
 2120 B=1
 2130 PRINT "You buy the biscuits and make your way to the sweet shop.":PROC20
 2140 ENDPROC
 2150 DEFPROC22
 2160 B=0
 2170 PRINT:PRINT ***
 *****:PRINT
 2180 PRINT "You don't buy the biscuits and make your way to the sweet shop."
 2190 PROC20:ENDPROC
 2200 DEFPROC23
 2210 PRINT:PRINT ***
 *****:PRINT
 2220 PRINT "As you lift the box of chocolates off the shelf, the whole pile comes tumbling to the ground!"
 2230 PRINT:INPUT "DO YOU HANG AROUND(Y/N)?":A235
 2240 IF A235="Y" PROC25
 2250 IF A235="N" PROC26 ELSE PRINT :INPUT- NOT ACCEPTABLE....":GOTO 2230
 2260 ENDPROC
 2270 DEF PROC24
 2280 PRINT ***
 *****:PRINT
 2290 PRINT:PRINT ***
 *****:PRINT
 2300 PRINT "You decide not to buy the sweets, and make your way home, hoping you have something nice for everyone."
 2310 PROEND
 2320 ENDPROC
 2330 DEF PROC25
 2340 PRINT:PRINT ***
 *****:PRINT
 2350 S=1
 2360 PRINT "The shop assistant helps you to restack the shelves, and you buy the chocolates. It is



1750 PRINT "You buy the mugs and continue onto the pet section."
 1760 PROC13
 1770 ENDPROC
 1780 DEF PROC77
 1790 PRINT:PRINT ***
 *****:PRINT
 1800 MUGZ=0
 1810 PRINT "You do not buy the mugs but continue on to the pet section."
 1820 PROC13:ENDPROC
 1830 DEFPROC18
 1840 BONEZ=1
 1850 PRINT:PRINT ***
 *****:PRINT
 1860 PRINT "You buy the bone, and it is gift wrapped! WHAT NEXT? It is 5:00pm so it is quite late."
 1870 PRINT:INPUT "DO YOU RETURN HOME, OR GOTO ANOTHER SHOP(H/S)?":A185
 1880 IF A185="H" PROCN0
 1890 IF A185="S" PROC20 ELSE PRINT :PRINT "INPUT- NOT ACCEPTABLE..
":GOTO 1870
 1900 ENDPROC
 1910 DEF PROC19

```

late now and you must go home."
2370 PROCEND
2380 ENDPROC
2390 DEFPROC26
2400 PRINT:PRINT"      ***"
*****:PRINT
2410 MONEY%+=MONEY%+450
2420 PRINT "Just as you attempt
to make a quick get away, the lad
y in the shop stops you. You ha
ve to restack all the sweets
single handedly."
2430 PRINT "You eventually leave
the shop, and make your way home
. Then you realise you have left y
our presents in the sweet shop,
you return to find it closed."
2440 PRINT "You have no time to
buy anymore presents and MUST retu
rn home."
2450 S=0:MUG%+=0:EARR%+=0:PENCIL%+=
0:B=0:BONE%+=0:S=0
2460 PROCEND
2470 ENDPROC
2480 DEF PROCEND
2490 PRINT:PRINT"      PRE
$<SPACE>":REPEAT:LET KEYS=INKEYS
(1):UNTIL INKEY(-99)
2500 CLS
2510 FOR A=1 TO 19
2520 PRINT "IT'S CHRISTMAS DAY,
IT'S CHRISTMAS DAY."
2540 NEXT
2550 FOR C=0 TO 200:YOU 19,1,RND
(7),0,0,0:NEXT
2560 CLS:YOU 19,1,2,0,0,0
2570 PRINT :PRINT "Please use th
ese key-words...."

```

```

2580 PRINT "EARRINGS; PEASE; DBI
SCUETS; CHOCOLATES; BONE; MUGS.
"
2590 PRINT "It is now time to gi
ve out the presents. The presents
you have are..."
2600 PRINT
2610 IF CASEX=1 PRINT " PEASE";
2620 IF EARX=1 PRINT " EARRINGS";
2630 IF MUGX=1 PRINT " MUGS";
2640 IF B=1 PRINT " DBISCUITS";
2650 IF S=1 PRINT " CHOCOLATES";
2660 IF BONEX=1 PRINT " BONE";
2670 IF S=0 AND CASEX=0 AND EARX=
0 AND MUGX=0 AND B=0 AND BONEX=0
PRINT "NOTHING...";;
2680 PRINT
2690 PRINT "IF YOU HAVE NOTHING
FOR THAT PERSON PRESS <RETURN
>";;
2700 PRINT:PRINT "IF YOU ATTEMPT
TO GIVE THEM SOMETHING YOU DO
NOT HAVE YOUR FAMILY WILL NOT BE
PLEASED...";;
2710 PRINT
2720 INPUT "WHAT HAVE YOU BROU
GH T FOR YOUR SISTER...":GS
2730 IF GS="EARRINGS" AND EARX=1
PRINT "YOUR SISTER IS VERY PLEAS
ED... AND ALLOWS YOU TO USE HER BEE
THOVEN RECORDS"
2740 IF GS="EARRINGS" AND EARX=1
X=X+25 ELSE PRINT "YOUR SISTER I
S DISGUSTED"
2750 INPUT "WHAT HAVE YOU BROU
GH T FOR YOUR FATHER...":FS
2760 IF FS="PEASE" AND CASEX=1 P
RINT "YOU ARE GIVEN A RISE IN PO

```

```

XET MONEY."
2770 IF FS="PEASE" AND CASEX=1 X
=X+25 ELSE PRINT "YOUR FATHER IS
ROUNDS YOU FOR ONE MONTH."
2780 INPUT "WHAT HAVE YOU BROU
GH T FOR YOUR MOTHER...":MS
2790 IF MS="CHOCOLATES" AND S=1
PRINT "THANXYOU, LOVE. WHAT A NIC
E THOUGHT."
2800 IF MS="CHOCOLATES" AND S=17
HEN X=X+25 ELSE PRINT "YOU CAN
DO YOUR OWN COOKING AND IRONING I
N FUTURE."
2810 INPUT "WHAT HAVE YOU BROU
GH T FOR YOUR DOG...":DS
2820 IF DS="DBISCUITS" AND B=1 P
RINT "HE LICKS YOU ALL OVER YOUR
FACE."
2830 IF DS="DBISCUITS" AND B=1 X
=X+25 ELSE PRINT "YOUR DOG BITE
S YOU."
2840 PRINT "YOUR SCORE IS ";X;""
";
2850 PRINT "YOUR TIME IS ";TIME
DIV 100;" secs"
2860 PROG60
2870 ENDPROC
2880 DEFPROC60
2890 PRINT "WOULD YOU LIKE ANOTHE
R GO(Y/N)?"
2900 REPEAT
2910 KEYS=INKEYS(1)
2920 UNTIL INKEY(-69) OR INKEY(-
86)
2930 IF INKEY(-69) CLS:GOTO 180
ELSE GOTO 2940
2940 PRINT "BYE-BYE":END
2950 ENDPROC

```

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AMSTRAD ACTION
REVIEW

QUAL-SOFT COMMENT: At last an INTELLIGENT management game for the knowledgeable soccer enthusiast!

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QUALIFIERS

ROME 90*

TAPE 2
FINALS

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- ★ In match tactics: any no. of individual player adjustments.
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- ★ Choose a 20 man squad to take to the finals.
- ★ Group of 4 prelims. 16 to final knockout comp.
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- ★ 2 from 9 substitutes (the FA tells us so!)

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Fast and furious action is the order of the day with Stuart Bain's game

THIS simple but addictive game is based on that old favourite Tron, or Light Cycles. The action takes place on the stock market and your task is to prevent the dollar from cornering the market and crashing the pound.

The screen is mainly blank except for a wall around the border and a pound and dollar placed at random somewhere in the middle. The dollar sets off in a random direction, turning left or right as necessary to avoid obstacles. The pound also sets off and it is up to you to make sure it doesn't bump into anything.

Both currencies leave a trail of the appropriate money behind them and the object is to corner the dollar and make it crash into

your trail, the wall or its own trail. The computer-controlled dollar will try to do the same to you. If you crash the dollar you'll move on to the next level where you'll pit your wits against two dollars. Complete this and you'll face three dollars, and so on, up to a total of six.

The action is fast paced and very addictive. The computer controlled dollars are quite clever, but it is possible to trap them if you keep your wits about you.

Dollar Dash

Controls	
Z	Left
X	Right
:	Up
/	Down

```

10 REM Dollar Dash
20 REM By Stuart Bain
30 REM (c) Electron User
40 DIM SX(1240),DX(5),BX(5),de
50 MODE 4
60 RX=RND(7):VDU 19,1,RT:0;19,
0,RX0R7:D;
70 VDU 23,1,0;0;0;0;23,224,$FF
FF,$FFFF,$FFFF,$FFFF;
80 LevZ=0:deX=0
90 PRINTTAB(10,12)"Stop the bo
llar from"TAB(10,14)"Cornering th
e Market"
100 FOR I=0 TO 2000:NEXT
110 REPEAT CS
120 FOR IX=0 TO 1240:SX(IX)=0:N
EXT
130 PRINT STRING$(40,CHR$224)TA
BCD,30)STRING$(40,CHR$224);
140 FOR I=1 TO 29
150 VDU 31,0,1,224,31,39,1,224
160 SX(I*40)=1:SX(I*40+39)=1
170 NEXT
180 FOR I=0 TO 39
190 SX(I)=1:SX(I+1200)=1
200 NEXT
210 FOR I=0 TO LevX
220 REPEAT
230 a=RND(36)+1:b=RND(27)+1
240 UNTIL a<16 OR a>23 OR b<11
. OR b>18

```

```

250 SX(a+b*40)=1:DX(I)=a+b*40:dx
e(I)=1:c=RND(4):BX(I)=1*((c=1)-(c
=2))+40*((c=3)-(c=4))
260 VDU 31,a,b,36
270 NEXT
280 XX=RND(8)+415*RND(18)*40:c=3
ND(4):ZX=1*((c=1)-(c=2))+40*((c=3
)-(c=4))
290 VDU 31,XXMOD40,XMOD1V40,98:S
((XX)=1
300 FOR I=112 TO 128 STEP 8
310 SOUND 1,-1,I,4
320 NEXT
330 SOUND 1,-1,80,4:SOUND1,-1,1
00,5
340 REPEAT UNTIL ADVAL=6=15
350 REPEAT
360 TIME=0:H2=INKEY-98-1NKEY-67
:V2=40*(INKEY-105-INKEY-73)*(HX=0
):ZX=2*((HX=0)AND(VX=0))+HX+V2:XX=X
I+ZX
370 VDU 31,XXMOD40,XMOD1V40,96
380 IF SX(XX) deX=1 ELSE SX(XX)
=1
390 FOR IZ=0 TO LevX
400 BX=BX(IX)
410 IF deX(IZ)=0 GOTO 450 ELSE
aX=AX(IZ):IF SX(aX+bX) BX=-1:IF S
X(aX+bX) BX=-40:IF SX(aX+bX) BX=1
:IF SX(aX+bX) BX=40:IF SX(aX+bX)
deX(IZ)=0:GOTO 450
420 BX(IX)=BX:aX=aX+bX:AX(IX)=a

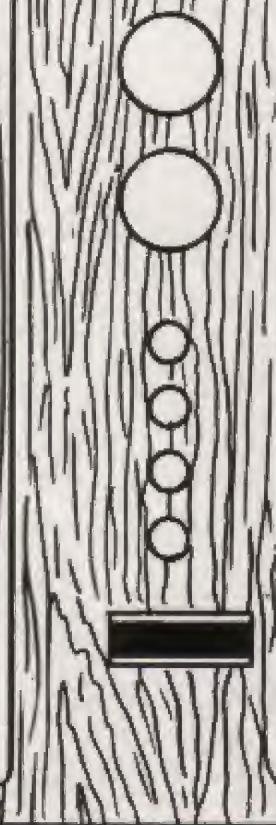
```

```

X:SI(aX)=1
430 VDU 31,aXMOD40,aX01V40,36
440 IF SX(aX+bX) AND RND(2)=1 b
I=1:IF SX(aX+bX) BX=40:IF SX(aX+b
X) BX=-40:IF SX(aX+bX) BX=-40:IF S
I(aX+bX) deX(IX)=0
450 BX(IX)=BX
460 NEXT
470 FLX=0
480 FOR IZ=0 TO LevX
490 FLX=FLX+deX(IZ)
500 NEXT
510 REPEAT UNTIL TIME>12
520 UNTIL deX OR FLX=0
530 LevX=LevX+1
540 UNTIL deX OR LevX=6
550 IF deX=0 FOR I=140 TO 180 S
TEP 2:SOUND 1,-15,I,1:NEXT:VDU 28
,6,20,33,14,12:PRINT"TAB(8)"WELL
DONE !!!!! The Dollar is vanquis
hed !!!!! press space to play aga
in"::REPEAT UNTIL INKEY=99:RUN
560 FOR I=40 TO 10 STEP-2
570 SOUND 1,-15,I,1
580 NEXT
590 VDU 28,10,20,29,14,12
600 PRINT" G A M E O V E R "
!!!! The Dollar has won!!!!TAB(4)"p
ress space"
610 REPEAT UNTIL INKEY=99:RUN

```

We interrupt this program to...



**Robert Henderson
adds another utility to
your bulging collection
of scrolling routines**

OVER the years we have published many scrolling routines - horizontal, vertical, coarse character based and fine pixel scrolling. We thought we had seen them all, but now Robert Henderson has produced yet another variation on the scrolling message theme.

Bigscroll is an extremely fast triple height text scroller that operates under interrupts. This means that no matter what the rest of the program is doing, the text will fly by in its scrolling window at the bottom of the screen.

Two, two-byte pointers hold the address of the message start and end - it can be any length and you're merely restricted by the amount of available memory. The more ram you have the bigger the message you can store. It is poked into memory at the start of the program.

Each character is taken by the routine and the bit pattern is obtained directly from the operating system rom - character definitions are stored from &C000 onwards. Each byte of the character is poked three times into memory to make the print three times higher than normal.

The whole machine code routine is exe-

cuted under interrupts every time frame fly-back occurs. As the code is quite long problems can occur because the micro can spend so much time in the interrupt that the main program can't get a look in and everything grinds to a halt.

To speed up the Electron the ADC is

switched off with *FX16 and keyboard processing is suspended with *FX178. This results in a significant saving in time, but at the expense of not being able to use the joystick port or keyboard. A Turbo Electron runs fast enough for these two *FX commands to be omitted.

```
10 REM Bigscroll
20 REM By R.Henderson
30 REM (c) Electron User
40 MODE 4:*FX16
50 VDU 23,1,0;0;0;0;
60 *FX178
70 PROCread($)
80 RMEM=83000
90 REM Main machine code
100 FOR i% = 0 TO 2 STEP 2
110 PX=$9000
120 C GPT i%
130 REM Save registers
140 .jp STA 879:STX 87A
150 STY 878:CLD
160 .text
170 LDA 871:CMR 877:BEQ 1K
180 INC 870:BNE prg
190 INC 871
200 REM Get letter and
210 REM store bit pattern
220 .prg
230 LDY #0:LDA (870),Y
240 CMP #1:BEQ invon
250 CMP #2:BEQ invoff
260 STA $B0:JSR times
270 REM Call scrolling
280 REM subroutines
290 .scrl1
300 JSR scrolling:JSR loop
```

Turn to Page 28 ►

◀ From Page 27

```

580 .XL LDA #0x:STA &70:LDA #h
1x
590 STA &71:INC &70:JMP prg
600 .rts RTS
610 \ Print triple
620 \ height letter
630 .tblh
640 LDA &8E:EDR &78:STA &7FFF:S
TA &7FFE:STA &7FFD:LDA &87:EDR &7
&8:STA &7FFC
650 STA &7FFB:STA &7FFA:LDA &86
LEDR &78:STA &7FF9:STA &7FF8
660 STA &7EB8:LDA &85:EDR &78:S
TA &7EBE:STA &7EBD:STA &7EBC:LDA
&84:EDR &78
670 STA &7EBB:STA &7EBA:STA &7E
&9:LDA &83:EDR &78:STA &7E98
680 STA &7D7F:STA &7D7E:LDA &82
:EDR &78:STA &7D7D:STA &7D7C:STA
&7D7B
690 LDA &81:EDR &78:STA &7D7A:S
TA &7D79:STA &7D78:RTS
700 .scrolling
710 LDA #870:STA &75:STA &73
720 LDA #878:STA &74
730 LDA #880:STA &72:RTS
740 .drw
750 LDA #87E:STA &75:STA &73
760 LDA #8CD:STA &74
770 LDA #8CB:STA &72:RTS
780 .scr
790 LDA #82C:STA &75:STA &73
800 LDA #840:STA &74:LDA &848
810 STA &72:RTS
820 .times LDA #0:STA &80
830 LDA #80:SEC:SBC #32

```

```

840 \ Multiply by 8
850 STA &8B:CLC:#8L &8B:RDL BBC
860 ASL &8B:RDL BBC:ASL &8B:RDL
880
870 .scan
880 \ Get char def
890 \ from ROM
900 LDA #0:STA &8E:LDA #8C:STA
98F
910 CLC:LDA &8B:ADC &8E:STA &8E
920 LDA BBC:ADC BBC:STA &8F
930 .do LDY #0:LDX #0
940 .dip LDA (&8E),Y:STA &81,X
950 INY:INX:CPX #8:BNE dip:RTS
960 :]:NEXT
970 T&22D=0:8221=89:*FX14,4
980 PRINTTAB(12,14);"SCROLLING
TEXT"
990 PRINTTAB(17,16);"DEMO"
1000 *FX15,1
1010 GCOL 12,1:SOUND 1,1,100,-1:
flg%0
1020 REPEAT:FOR Lix=464 TO 596 S
TEP 8
1030 MOVE D,Lix:DRAW 1278,Lix
1040 ENVELOPE 1,1,-1,1,78240,1,1
,4,0,0,0,0,0,0
1050 IF INKEY(0)=32 (i%=1024:flg
%1
1060 NEXT:UNTIL flg%1
1070 VDU 7:*FX13,4
1080 CLS:VDU 23,1,1,0,0,0,0,:END
1090 DEF #ProcRead(pointer%)
1100 start%=&3000:end%=&3200
1110 lo%=&start% MOD 256
1120 hi%=&start% DIV 256
1130 fil%=&end% MOD 256
1140 sh%=&end% DIV 256

```

1150 T&70=lo%:T&71=hi%
1160 T&76=fix:T&77=sh%
1170 FOR fx=start% TO end%:ff%3
2:NEXT
1180 v%=&start%
1190 FOR r%0 TO pointer%:READ f
\$ 1200 FOR mem%1 TO LEN(f\$)
1210 dat%=&mem%1
1220 ?dat%=&ASC(MIDS(f\$,mem%1))
1230 NEXT
1240 v%=&v%+(mem%1-1)
1250 NEXT
1260 REM Poke inverse data
1270 ?83182=1:783194=2
1280 ?878=0
1290 ENDPROC
1300 DATA " As you can see, thi
s is a demonstration of smooth (a
nd fast!) horizontal scrolling...
"
1310 DATA " The code works in mod
e 4 only and (at least in theory)
is able to scroll a message of u
p to 65536 bytes (64k), which is
more space than you are ever like
ly to need... "
1320 DATA " You could have sc
rolling messages in high score ta
bles, demos and 1001 other uses...
"
1330 DATA " It can also display
your message in "
1340 DATA " inverse video...
How about that then? ... "
1350 DATA " Type *FX13,4 to stop
the scrolling... Thats all fo
rs... "

JOYSTICKS



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LIKE countless others, I often wonder how certain programmers achieve great success. Is the ability inherent within them before ever they begin programming. Or do they just get lucky. For example, how do they avoid the obstacles that turn into insurmountable problems for others?

The issue is shrouded in yet more mystery when you consider that most gifted programmers can't explain why they are able to program well. It is like music: You occasionally hear of musicians who cannot read music, but they are able to play tunes which make the hairs on the back of your neck stand up.

Certain people find programming second nature. For instance, some don't plan their strategy at all, but simply leap straight in. To the not so gifted this is programming suicide, and it usually leads to one of three outcomes: A program which is not what it could be, a project abandoned or a program structure that cannot be enhanced.

How about you. What do you do first? If you immediately begin programming then you probably assume that you belong to the group which doesn't need flowcharts or a

Francis Botto tries to discover how some programmers write such good software

a diet, you should never go programming on an empty head.

To get down to business, imagine you have come up with a program concept. First you should draft a descriptive algorithm which describes what it is to do. For instance, if you were programming an expert shell, you might write: "Program to permit the user to devise expert systems". The more concise it is the better.

Next comes the question: Should you use Basic or assembly language? This can be a difficult decision to make. Of course, you can always opt for a hybrid assembly language/Basic program which is one of the luxuries of the Electron.

If you are writing a program that does not

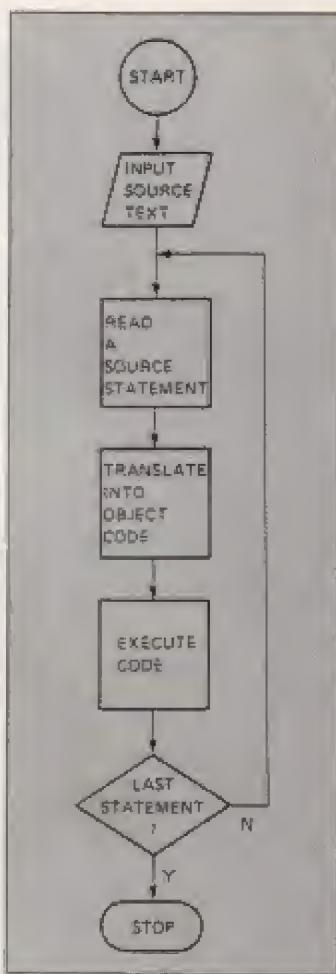
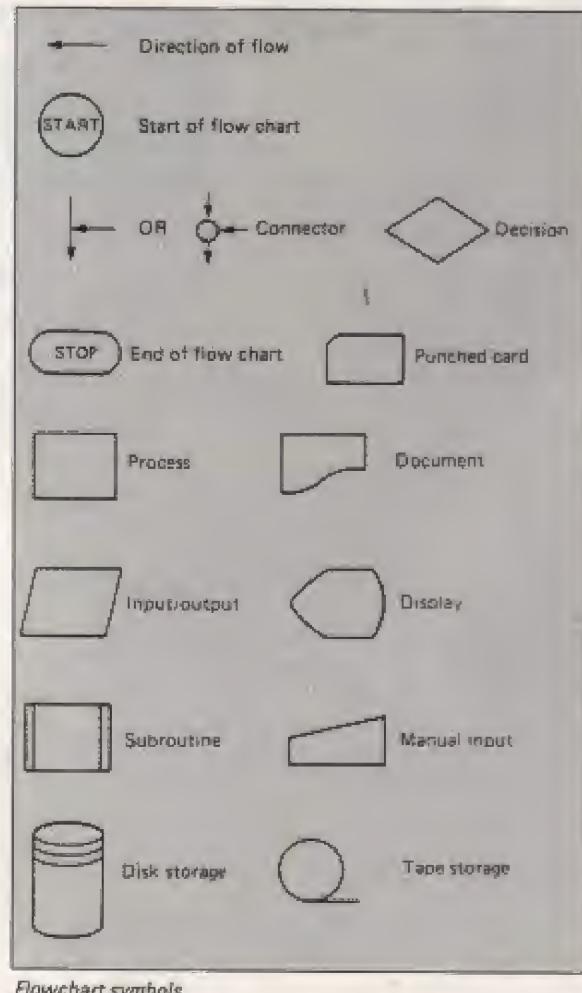
Turn to Page 30 ▶

According to plan

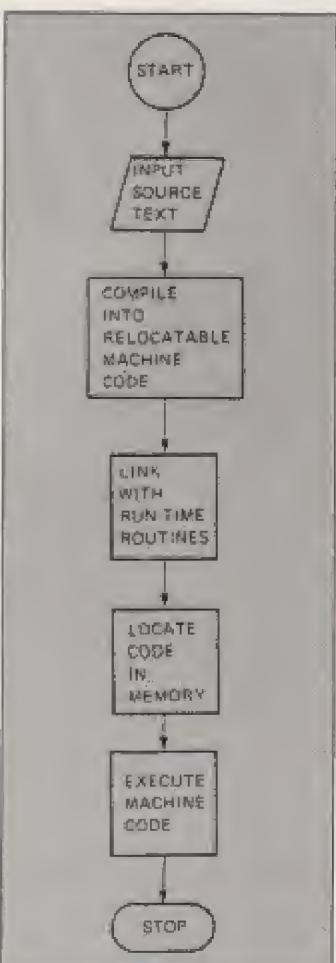
series of steps. However, that assumption might be misguided, as it might just be that you think you are a programmer who belongs to this elitist group, when in fact your work could be greatly improved by some basic preparation.

Amusing thoughts on this subject are expressed by Rodney Zaks, author of many computer books who wrote: "Ten per cent of the programming population can write a program successfully without having to flowchart. Unfortunately, 90 per cent of the population believes it belongs to this 10 per cent".

Therefore, a staggering 80 per cent of programs are nowhere near what could be described as optimum solutions. It should come as no surprise to hear that the best ones are usually those that emerge from careful planning. Just as you should never go shopping on an empty stomach while on



Flowchart for an interpreter



Flowchart for a compiler

From Page 29

depend upon a high speed of execution, then Basic will do. Alternatively, if high speed is the only route to a satisfactory program solution, you will probably find that you require assembly language.

It is also important to bear in mind your programming strengths and weaknesses. If you are not a fluent assembly language programmer you might find that you can develop an equivalent Basic program in a fraction of the time.

OK, you have a concept, descriptive algorithm and you have decided what language to use. What next? At this stage, a programmer who has not had a misspent period with the anti-structured programming set, which uses GOTOs, GOTOs and GOTOs, will have to decide on one of two approaches: A top down or bottom up analysis.

What is the difference? A top down analysis is simply a method of beginning at a high level and working your way down to the low level program workings. For instance, you might begin by listing all the procedures or subroutines you wish to use and then fill in the gaps, working your way down to low level program statements such as loops, input statements and other commands.

Not surprisingly, a bottom-up analysis is

the exact opposite, where you begin with low level workings making your way toward a high level solution. I think a top down analysis is the best approach, often leading to a better program structure, particularly when programming in Basic.

Now it is time to draft either a flowchart or a series of steps. Flowcharts are fine for achieving a high level outline, but the approach can break down when moving toward low level program workings. Using a bottom up analysis is not really practical while flowcharting.

The alternative to the flowchart is a series of steps:

PROGRAM Expert shell
A. Procedure: Accept rules
1. Input rules into array
B. Procedure: Edit knowledge
1. Pinpoint rule to edit
C. Procedure: Inference engine
1. Chain rules
D. Procedure: Save knowledge
1. Open file
2. Write rules in array
E. Procedure: Load Knowledge
1. List all files in disc
2. Load rules into array

The list is drafted in the classic outline style. When you reach this stage, whether you are using a flowchart or a series of

steps, you should pinpoint those parts of the program which appear more than once. You might find that one procedure can replace two or more of the others.

Most programming involves the repetition of the same program excerpts and programmers use the same basic structures. Assembly language is no different: What seems like a long and complex assembly language program will often contain many similar program sections.

The essence of good programming is to minimise the number of program sections which are repeated. That way you will end up with a compact program, save memory space, and achieve the most from the Electron. You can build a library of commonly used routines and merge them into your listing during program development, saving a great deal of time.

You can now begin programming and, if you are new to this planning approach, you will find that things go a lot more smoothly.

Planning and programming skills on their own do not necessarily mean that you will write successful programs — a good idea is required. However, it would be true to say that what should be a good program can be spoiled by a lack of careful planning. Hopefully you will now get down to writing that masterpiece for *Electron User* which you have been putting off for ages.

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Ian Webster dreamed up the superb 3D arcade game that'll have you hooked right from the word go

THE octopus race is being poisoned by nuclear waste and your task is to enter 10 cities and destroy plutonium balls – deadly pulsating spheres dumped by unscrupulous waste disposal firms – while avoiding the robot guard spheres that protect them.

You must beware of dangers below the waves and can jump only small distances – too great a drop and you'll die, or too great a height and you won't be able to climb it. And don't fall off the edge of the city walls or you'll be lost forever.

Help is at hand in the form of transporters and destimators. Stepping on to a transporter will instantly whisk you to a destimator. However, the guards have a Plan B – if you clear all 10 cities of plutonium balls they bring out the spare set and make the cities invisible.

Each city except the first is accessed by a password, and this is given once the level

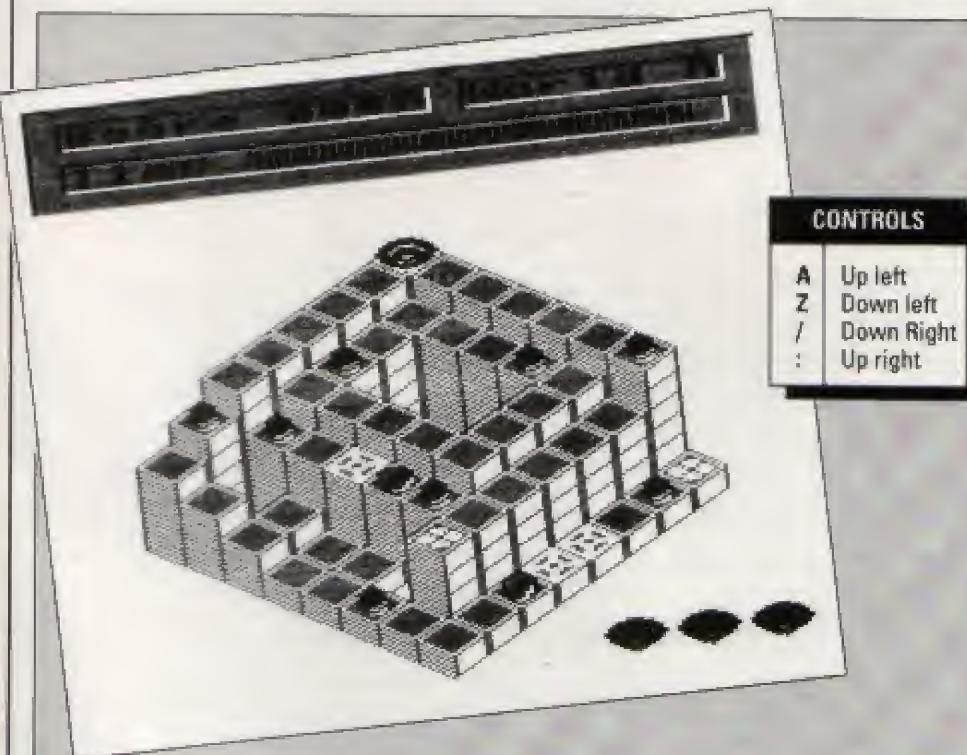
GREAT BALLS OF FIRE!

has been completed, so you can restart from the screen you were on last time without having to clear the preceding ones first. There's also a time limit in which to clear each level, so keep one eye on the timer at the top of the screen.

The game is played on a 3D landscape produced using the normal technique of plotting the blocks furthest away from the screen front and working forwards. The blocks are sprites EORed on to the screen, but as colours two and three are both set to the same colour they appear to be masked.

This technique saves graphic data and speed.

Final point: Octopuses travel in an odd way. They move in one direction until they hit a barrier, then choose a random direction and carry on.



```

10REM Octavia
20REM By Ian Webster
30REM (c) Electron User
40REM Don't Renumber!
50IF PAGE>8000 GOTO1590
60:
70M00E5:DSCLI"FX4,2":PROCinit:
H1X=100:REPEAT:PROCtpage:PROCgame
:IF S>H1X H1X=SX
80UNTIL
90:
100DEFPROCrestore(lev):lev=lev
M00 10:RESTORE(1350+lev*10):ENDPR
0C
110:

```

```

120DEFPROCgame:DSCLI"FX178":PRO
Ctop:LX=3:PROCcls:SZ=0
130REPEAT:COLOUR129:COLOUR3:PRI
NTTAB(18,1);CHR$(65+Level):TAB(1,
3)"Time ";STRINGS(13,CHR$224);:GC
OL0,1:MOVE1200,903:DRAW1200,923:P
ROCrestore(Level):PROCread:PROCdr
aw:PROCmove:level=level+1:UNTIL L
Z=0:DSCLI"FX178,255":COLOUR3
140COLOUR129:PROCbc("GAME OVER"
,160:TIME=0:REPEATUNTILTIME>300:P
ROCcls:ENDPROC
150:
160DEFPROCa(AD,N,T):FORA=1TO N:
READ x,y:Z=(y+9)-x:T=((y+14)*x)-H

```

```

(x,y):!&70=X*810+Y*8140+85800:187
2=AD:CALLsp:G(x,y)=T:IF T=2 G(x,y)
)=A+2
170IF T=3 T(A-1)=x:T1(A-1)=y:G(x,
y)=0
180NEXT:ENDPROC
190:
200DEFPROCded:SOUND1,1,100,6:50
UND1,1,80,6:50UND1,1,50,7:=a:FNad(
LX,LY):xx=(YI*9)-X:yy=((YI+14)*X
)-H(LX,LY):b=xx*810+yy*8140+8580
0:&70=a:&72=84200+lof:CALLsp!:&
70=b:&72=84200+of:CALLsp:a=b
210PR0Cd25:&70=a:&72=84200+of
:CALLsp
220:&70=a:&72=84180:CALLsp:PRO
Cd25:&70=a:&72=84180:CALLsp!:&7
0=a:&72=84000:CALLsp:PROCd25:&7
0=a:&72=84000:CALLsp:ENDPROC
230:
240DEFPROCw(x,y,x1,y1):x=x*64-8
:y=y*991-y*32:x1=x1*64+64:y1=1029-y
1*32:GC0L0,0:MOVEx1,y1:DRAWx1,y1:D
RAWx,y:GC0L0,3:DRAWx,y1:DRAWxT,y1
:ENDPROC
250:
260DEFFNad(x,y):?860=k:1861=y:?
862=H(x,y):CALL&A00:=-860
270:
280DEFPROCsp(AD,x,y):?860=x:186
1=y:1862=H(x,y):CALL&A00:&186
0:&72=AD:CALLsp:ENDPROC
290:
300DEFPROCmove:Dx=0:PROCclives:X
Z=5X2:Y2=5Y:PROCsp(84200,X1,Y1):
of=0:REPEAT:T1ME=0:LT=-100:PROCcl
ive:REPEAT:LX=X2:LY=Y2:Lof=of
310PROCtime:IF TIME>4000 Dz=1:6
DT0490
320Lmf=mf:mf=m1 EOR 840:FORM=1T
D2:PROCmon(m):IF (M&(n)=X2 AND M
Y&(n)=Y2)Dz=1
330NEXT:IF Dz=1 GOTO 490
340IF INKEY=106 TX=TIME:REPEATUN

```

Turn to Page 32 ►

From Page 31

```

TILINKEY-90:TIME=T%
 350IF INKEY-73 XZ=XX-1:of=840:0
0TO390
 360IF INKEY-105 XZ=XX-1:of=0:60
TO390
 370IF INKEY-98 YZ=YX+1:of=0:60T
0390
 380IF INKEY-66 YZ=YX-1:of=640
390PROCtime:IF INKEY-17:IF XZ>10:0
4001FINKEY-B2:IF XZ>10
410IF LX=XX AND LY=YY AND of=0
1 UNTIL0
 420IF XX<0D01X>T0RY2<0D0RY2>7 DZ=
1:GOT0490
 430IF H(XX,YY)>H(LX,LY) XX=LX:Y
Z=LY:IF of=0 UNTIL0
 440IF H(LX,LY)=H(XX,YY)>1 OR H(
XX,YY)=0 OR TIME>4000 DZ=1:GOT049
0
 450PROCsp(84200+of,LX,LY):IF G
(XX,YY)=1 G(XX,YY)=0:PROCsp(840C0
,XX,YY):SOUND1,1,120,3:SZ=SZ+1DZP
RCscore:MX=MY-1
 460LX=XX:LY=YY:of=of
 470PROCsp(84200+of,XX,YY):FORm=
1TO2:IF XX=MX(m) AND YY=MY(m) DZ=1
 480NEXT:IF DZ=0:IF G(XX,YY)>2 L
of=of:LX=XX:LY=YY:T=G(XX,YY)-3:XX
=T(T):YX=T(T):PROCtrans
 490UNTIL MX=0 OR DZ=1:IF DZ=1 ?
RCded:PROCd25:PROCd25:PRINTTAB(1
,3)"Time ",STRINGS(13,CHR$224);:L
Z=LZ-1:PROCclives:XX=SZX:YX=SYX:PR
0Ccheck:of=0:PROCsp(84200,YY,YY):G
C0L0,1:MOVE1200,903:DRAW1200,923
 500IF DZ=0 PROCdoneit
 510DZ=0:UNTIL LX=0 OR MY=0:PROC
cls:ENDPROC
 520:
 530DEFPROCtop:VDU28,0,4,19,0,17
,129,12,26:MOVE0,863:DRAW0,1023:0
RAW1279,1023:GC0L0,0:MOVE1279,101
9:DRAW1279,863:PRINTTAB(1,1)"Scor
e 0000"TAB(12,1)"City A"TAB(1,3)
"Time ",STRINGS(13,CHR$224);
 540PROCW(1,1,10,1):PROCW(12,1,1
8,1):PROCW(1,3,18,3):GC0L0,1:MOVE
1200,903:DRAW1200,923:ENDPROC
 550:
 560DEFPROCtives:VDU28,14,29,19
,28,17,128,12,17,129,26:IF LZ>D x=
14:y=2B:FORa=1TOlx:1870=x*810+y*&
140+85800:1872=84200:CALLsp:x=x+2
:NEXT:ENDPROC ELSE ENDPROC
 570:
 580DEFPROCread:READ C,C1:VDU19
,1,(C*ABSlevel<1D):0;19,2,C1;0;1
9,3,01;0:FORy=1TO8:READ A:yFORx=
1 TO 8:H(X-1,Y-1)=VALMIDS(A,X,1)
:6(X-1,Y-1)=0:NEXT,:READ SXH,SYX:
ENDPROC
 590:
 600DEFPROCdraw:FDY=0 TO 7:x=Y+
9:y=Y+13:FORx=0TO7:IF S0=x*810+y*&
140+85800:2&52=H(X,Y):CALLlower:x
=x-1:y=y+1:NEXT,
 610READ N:MX=N:MY=0:PROCsp(840C0,N,1)
:READ N:PROCsp(84100,N,2):PROCsp(84
140,N,3):FORa=1TO2:READ MX(A),MY(
A):md(A)=RND(4):PROCsp(84180,MX(A
),MY(A)):NEXT:mf=0:ENDPROC
 620:
 630DEFPROCscore:PRINTTAB(7,1);S
TRINGS(4-LEN(STR$(S1)),0":SZ:EN
DPROC
 640:
 650DEFPROCtrans:FORa=10DT0200ST
EP10:PROCsp(84200+of,LX,LY):SOUND
D1,4,A,1:of=0:PROCsp(84200,XX,YY)
:NEXT:ENDPROC
 660:
 670DEFPROCtime:IF TIME<LT<8 END
PROC
 680LT=TIME:Q=TIME/5:GC0L0,1:MOV
E1200-R,923:DRAW1200-R,903:MOVE12
08-R,923:DRAW1200-R,903:ENDPROC
 690:
 700DEFPROCc(A$,Y):PRINTTAB(1D-L
EN(A$)/2,Y);A$,:ENDPROC
 710:
 720DEFPROCb4g(A$,X,Y):VDU31,X,Y
:FORa=1TOLEN(A$):1870=ASC(MIDS(A$
,1,1)):XZ=870:YZ=0:AS=&A:CALL&FFF
1:VDU23,255:FORa=&T1TO874:VDU3a,7
a:NEXT:VDU255,8,10,23,255:FORa=87
5D0878:VDU2a,9a:NEXT:VDU255,11:NE
XT:ENDPROC
 730:
 740DEFPROCbc(A$,Y):PROCbig(A$,1
0-LEN(A$)/2,Y):ENDPROC
 750:
 760DEFPROCdoneit:COLOUR12B:COLO
UR3:PROCc("City "+CHR$(65+level),
12):PROCc("Completed",14):COLOUR1
:PROCc("Entering City "+CHR$(66+L
evel),16)
 770IF Level<10 COLOUR3:PROCc("Y
our Password is:",18):PROCc(FNup(
Level+1),20)
 780FORa=150 TO 200 STEP5:SOUND01
,1,A,1:SOUND1,2,A,1:NEXT:TIME=0:R
EPEATUNTILTIME>300:COLOUR129:COLO
UR3:ENDPROC
 790:
 800DEFPROCd25:FORdel=1TO350:NEX
T:ENDPROC
 810:
 820DEFPROCcommon(A):LDCALx,y:x=MX
(A):y=MY(A):d=ad(A):x=x*x(d):y=y*
y(d)
 830IFx<0D01x>T0RY<0DRy>T PROCcse
t:ENDPROC
 840IF G(x,y)=1 OR ABS(H(MX(A),M
Y(A))-H(x,y))>1 OR H(x,y)=0 PROCr
set:ENDPROC
 850PROCsp(84180+1mf,MX(A),MY(A)
)
 860MX(A)=x:MY(A)=y:PROCsp(84180
+mf,x,y)
 870IF RND(8)=1 ad(A)=RND(4)
 880ENDPROC
 890:
 900DEFPROCset:ad(A)=RND(4):x=M
X(A):y=MY(A):PROCsp(84180+1mf,x,y
):PROCsp(84180+mf,x,y):ENDPROC
 910:
 920DEFPROCcalcmc:FORa=0TO2STEP2
:PX=840D:OPT A:LDA&61:ASLA:ASLA:
ASLA:ASLA:STA&61:LDA&60:ASLA:CLC:
ADC&61:TAY:STA&60:LDA&60:Y:STA&
60:LDA&61:Y:STA&61:LDA&62:BEQ
fint:Loop:LDA&60:SEC:5BC&64:STA&
60:LDA&61:SEC&1:STA&61:0EX:BNELloop
 930.fin:LDA&60:STA&62:STA&63:RTS
 940.table:J:FDY=QD7:FORx=0TO7
:xx=(y+9)-x:yy=((y+14)+x):a=xx*1
0+yy*8140+85800:2PZ=a:7(PZ+1)=a D
1V 256:PC=PC+2:NEXT,:NEXT:ENDPROC
 950:
 960DEFPROCcheck
 970DX=0:FORm=1TO2:IF (SXZ=MX(m) A
ND SYZ=MY(m)) DZ=1
 980NEXT:IF DZ=1 of=mcnf=mf ED
R 240:FORm=1TO2:PROCm(m):NEXT:
GOT0970
 990ENDPROC
 1000:
 1010DEFPROCcls:1862+80000:FORa=1
TO8:CALLcls:NEXT:ENDPROC
 1020:
 1030DEFPROCINIT:VDU23,8202,0,0,0
,23,224,0,170,170,170,170,170,170
,0:RESTORE1510:FORa=84000 TO 8427
T STEP4:READAS:IN=EVALC("E"+AS):NE
XT
 1040DIM H(7,7),G(7,7),T(10),T(1
0),MX(2),MY(2),nd(2),x(4),y(4):x(
1)=1:x(2)=-1:y(3)=1:y(4)=-1
 1050ENVELOPE1,1,6,4,-5,1,8,5,0,0
,0,0,0,0
 1060ENVELOPE4,2,-5,-3,2,2,4,8,0,
0,0,0,0,0
 1070PROCmc
 1080PROCcalcmc
 1090ENDPROC
 1100:
 1110DEFPROCmc:FORa=0TO2STEP2:PY=
900:OPTA
 1120,SP:JSRb:JSRba,p:LDY#0:L:LD
A&70,Y:BEQ(872),Y:STA(870),Y:IN
Y:CPY#32:BNEL:RTS:Z:LDAB70:CLC:A
DC#64:STA&70:LDA&71:ADC#1:STA&71:
LDA&72:CLC:ADC#820:STA&72:LDA&73:
ADC#0:STA&73:RTS
 1130.block:LDA#D:STA&72:LDA#840:
STA&73:STA&75:LDA#860:STA&74:JSRb
p:JSRba:JSRbp:JSRbar:bp:LDY#0:Z:
LDA#70,Y:AND(874),Y:ORA#E72),Y:
STA(870),Y:INY:CPY#32:BNEL:RTS
 1140.ba:LDA&70:CLC:ADC#64:STA&70
:LDA&71:ADC#1:STA&71:LDA&72:CLC:A
DC#820:STA&72:LDA&73:ADC#0:STA&73
:LDA&74:CLC:ADC#820:STA&74:LDA&75:
ADC#0:STA&75:RTS
 1150.tower:LDA#52:BNEL:RTS:OK:
TAX,:LP:LDA#50:STA&70:LDA#51:STA
71:JSRblock:LDA#50:SEC:SBCH#4:STA
&50:LDA#51:SBCH1:STA&51:DEX:BNEL
:RTS
 1160.cls:LDA#840:STA&60:LDA#85E:
STA&61:LDX#341,L:LDY#0,Z:LDAB6
0,Y:AND(862),Y:STA(860),Y:INY:BN
EL2:INC&61:INC&63:DEX:BNEL:RTS:Z:
NEXT:ENDPROC
 1170:
 1180DEFNpass(A$):BS="":FORa=1
TO LEN(A$):BS=BS+CHR$(ASC(MIDS(A$
,a,1))+3):NEXT:RESTORE1470:a=0:Le
vel=0:REPEAT:READ AS:IF AS=BS Lev
el=a
 1190a=a+1:UNTIL a=10:=level
 1200:
 1210DEFNNinput:BS="":REPEAT:AS=6
ET5:IF AS=CHR$127 AND LEN(AS)>0 B
S=LEFT$(BS,LEN(AS)-1):VDU127
 1220IF LEN(B$)<10 AND AS>="A" AN
D AS<="Z" BS=BS+A$:PRINT AS;
 1230UNTIL AS=CHR$13:=BS
 1240:
 1250DEFNNup():RESTORE1470:FORa=
1TO8:READ AS:NEXT:BE="":FORa=1 TO
LEN(AS):BS=BS+CHR$(ASC(MIDS(AS,a
,1))+3):NEXT:=BS
 1260:
 1270DEFPROCtpage:VDU26,20,12,19
,1,5,D:DRAW1279,0:DRAW1279,1023:0
RAW0,1023:DRAW0,0:PROCbc("Octavia
",1):COLOUR1:PROCc("By Ian Webste
r '89",31):COLOUR2:PROCbc("The Cha
racters",4):1870=84210:CALLblock:
PROCbig("Block",4,8)
 1280:1870=86500:CALLblock:1870=86
500:1872=84100:CALLsp:PROCbig("Te
leport",4,11):1870=86990:CALLblc
k:1870=86990:1872=84140:CALLsp:PR
OCbig("Destinator",4,14):1870=86
50:1872=840C0:CALLsp:PROCbig("Plu
tonium Ball",4,17)
 1290:1870=86F00:1872=84100:CALLsp
:PROCbig("Robot",4,19):1870=87250
:1872=84200:CALLsp:PROCbig("Octav
ia (Hero)",4,21):COLOUR3:PROCc("
Enter Password",24):PROCc("Return
for City A",25):COLOUR2:PROCc("P
igh Score :"+STR$(H13),30):FX15
 1300VDU31,5,28:COLOUR1:level=84c

```

```

pass(FNinput):COLOURS:ENDPROC
1310:
1320REM Level data in following
format :
1330REM col1,col2,grid(x8),xstan
t,ystart,no,gbabs,no,Trans start,T
rans end,monx,mony(x2)
1340:
1350DATA 4,2,666664654,65555403,6
5005422,65005411,65005411,6555540
1,644444441,11111111,0,0,8,6,0,3,1
,5,1,1,4,5,5,7,5,0,6,1,7,3,5,3,3
,7,4,7,0,0,6,4,0,7,4,3,5,7
1360DATA 5,7,77555101,77005101,6
0005111,50005101,55555101,1111110
1,000110001,11111111,7,0,8,2,0,0,2
,6,2,5,4,0,5,2,5,2,7,7,7,2,5,0,4
,4,0,0,3,4,0,5,3,4
1370DATA 1,7,777777777,77655331,7
6654331,55554331,54444321,5333332
1,52002221,51001111,0,0,8,1,0,6,0
,6,1,7,1,5,4,7,6,7,6,0,7,2,7,0,4
,7,1,4,2,2,5,0,6,6
1380DATA 4,0,777777777,766666666,7
6050005,76555554,76050003,7605000
2,76050001,76563211,1,1,9,6,0,4,1
,7,1,1,3,8,3,7,4,0,5,3,6,5,7,1,7
,7,0,0,5,0,3,3
1390DATA 2,7,77555555,76544441,7
500041,64100041,63100041,6210004
1,60100031,65200021,0,0,8,1,7,7,0
,2,1,0,3,6,3,1,5,7,6,6,7,3,0,5,7
,5,2,7,1,3,0,7,0,0,4,1,1,3
1400DATA 7,7,777777777,68066061,5
5505511,40444111,33301111,2221101
,1,00111001,12018111,0,0,9,2,2,4,0
,5,2,8,5,3,7,6,1,4,4,7,3,3,1,3,6
,5,2,2,3,1,4,6,2,7,0,1,7,6,4,4,2

```

```

14100DATA 1,7,07654321,77654321,6
6604321,55050321,44404321,3333332
1,22222221,11111111,7,7,7,6,7,2
5,5,4,1,1,3,2,1,1,1,6,6,3,3,7,7,
1,4,0,1,4,0,7,5,3,3,3,1,0,0,1,4,4
,3,3,4,4,0,3

14200DATA 5,7,77775555,77775555,7
7775555,77775555,33331111,33331111
1,33331111,33331111,7,0,15,5,4,6,
4,7,4,4,5,5,5,6,5,7,5,4,6,5,6,6,6
,7,6,4,7,5,7,6,7,7,7,8,4,0,6,1,5,
1,5,3,0,4,2,5,3,4,3,6,0,0,1,0,0,7
,0,1,3,3,3,2,2,3,4,4,5,3,3,4

14300DATA 2,7,77777707,60000000,5
5555555,00000004,33333333,2000000
0,10101011,11001101,5,0,7,0,0,0,2
,3,2,7,3,2,4,6,6,3,6,5,4,2,6,4,7,
4,5,7,7,7,3,4,6,2,5,6,7,0,2,6,7,0
,5,2

14400DATA 4,7,77777777,76666666,7
6555555,74544444,76543333,7654322
2,76543210,76543201,0,0,11,7,0,0,
7,4,1,5,4,2,6,4,4,7,5,6,6,2,3,2,2
,4,2,9,7,3,6,3,5,3,4,3,3,3,3,4,3,
5,3,6,3,7,7,7,7,7,7,7,4,7,7,7,7,7
,7,7,7,7,7,7,5,5,6,6

1450:
1460REM Passwords
1470DATA LVDDF,DVLPRY,5UHQXGH,IR
XQGDWLRL,KDUL,VHCGRR,KHOLFRQ,WUDQ
WRU,URERW,6DQHHD
1480:
1490:
1500REM Sprite data
15100ATAD,8050201,8050201,F0F0F0
7,8080408,80F0F0E,0,80A0408,80A0D,
8,80A0D0A,70F0F0F,50A0508,80F0F0D
F,80804A0D,905080D,1010101,102050A
,0,80A050A,102050A,8080808,80C0A0
9,8040201,0,FFFFFFF,88CCE,88CCE
E

15150DATA 6,113377,0,FFFFFFF,113
377,0,0,0,0,0,0,0
15200DATAEE0C8800,FFFFFFF,0,EECC
8800,0,77331100,77331100,FFFFFFF
,0,0,77331100,77FFFF77,EECC8800,C
FFFFFEE,0,0,0,0,112377,0,C8E4EAE
,0

15300DATA0,0,0,03010000,3010000,0
030905,C080000,70C890A,0,C080D80,
103,0,509030E,103,A090C07,80E,80C
,0,0,1000000

15409ATA0,E00D303,0,7080CDC,0,80
00000,1,0,3030DDE,0,C0C0D007,0,8,0
,0,1110000,4433000,7733BB99,EEC
0000,FFFFFFF,0,8888000,11,0,67
FFFFFF,33,2E9FBFC,EE,88,0,0,0,44
663311,FFFFFFBB99,EEA6CC08,DEFFFFFF
,0,0,0,0,7777FFFF,1123,2EAE97DF
15500ATA884C,0,0,33110000,357777
33,CFFFFF33,8F7F5FBF,3FFF9FCC,18E
FAFD0,CC880000,CCEEEETC,1133,0,37
EFCFFF,3,CE7F3FFF,80C,88C,0,3311
8000,33777733,FFFFFF33,FFFFFFF,FF
FFFFFCC,FFFFFFF,CC880000,4C6E6ED
C,1133,0,37EFFFFF,3,CE3FFFCF,80C,
88C,0
1560:
1570REM Downloader
1580*FX18
1590PRINT"DownLoading Software.
Please Wait.."
1600*KEYO *T,|MDX=PAGE-&E0D:FDRI
X=PAGE TO TOP STEP4:!(1%-D%)=!IZ:
NEXT:PAGE=&E0D:!(TOP-D%)=FF10D|MO
LD|MRUN|W
1610*FX138,0,128
1620END

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 Rename - rename multiple files using wildcards
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Advanced File Manager 1.04 (c) PRES 1986									
Source: Advanced Disc 3.5" B+ 1.44MB/5.25" 1.2MB									
File	Editor	File	Editor	File	Editor	File	Editor	File	Editor
Open	Editor	Open	Editor	Open	Editor	Open	Editor	Open	Editor
Save	Editor	Save	Editor	Save	Editor	Save	Editor	Save	Editor
Print	Editor	Print	Editor	Print	Editor	Print	Editor	Print	Editor
Report	Editor	Report	Editor	Report	Editor	Report	Editor	Report	Editor
Exit	Editor	Exit	Editor	Exit	Editor	Exit	Editor	Exit	Editor
Target: Advanced Disc 3.5" B+ 1.44MB									
File	Editor	File	Editor	File	Editor	File	Editor	File	Editor
Open	Editor	Open	Editor	Open	Editor	Open	Editor	Open	Editor
Save	Editor	Save	Editor	Save	Editor	Save	Editor	Save	Editor
Print	Editor	Print	Editor	Print	Editor	Print	Editor	Print	Editor
Report	Editor	Report	Editor	Report	Editor	Report	Editor	Report	Editor
Exit	Editor	Exit	Editor	Exit	Editor	Exit	Editor	Exit	Editor

Screen picture shows AFM in Copy mode on Master Turbo

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AFM has four distinct modes:

MENU - allows browsing through the files and directories on a disc. Files are started from a menu of up to 7 options chosen for a selected ROM. Loaders are provided for Basic, The Basic Editor, View, ViewSheet, ViewStore, ViewSpell, Edit, Wordwise (+) and InterWord. This list can be expanded infinitely using an Acorn-approved OSWORD call... full details and example in the manual.

DELETE - allows files to be marked and then deleted with one keystroke.

RENAME - allows one or more files to be marked and then renamed using a wildcarded name, ie one which varies with each file renamed. Thus you could rename s1, s2 and s3 to be s1.old, s2.old, and s3.old in one operation... and that's only the beginning! As well as using the whole of the original name you can also pick out individual characters to form part of the new name.

COPY - the strongest feature of AFM. It is a two stage copy routine. With both source and target directories shown on screen the files to be copied are marked. Once all the files have been marked copying is started and the computer can be left to get on with it!

Large files can be split across several disks, and recombined. As much as possible of the computer's memory is used for copying files, including unused parts of shadow screen memory, sideways ram banks (inc. A7P), ram cartridges (inc. ABR (32K) and ADR (256K)), tube memory (up to 64K), B+ page ram (128K) and unused parts of the Slammer Master Ramboard (Electron).

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Superior Col. Vol. 3

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Tony Leah reporting from one of the most successful Electron software companies

Heading for the century

FOR six years the name Superior Software has stood for quality and quantity in the Electron games marketplace – a sector of UK computing that hasn't been overblessed with choice in entertainment, particularly in recent times.

Surprising, therefore, that the software house that has supported the Electron since the machine's earliest days has never been paid its due in a computer magazine until now.

While packing for his firm's recent relocation from Leeds to Brigg in South Humberside, managing director Richard Hanson found time to talk about Superior Software's history and its plans for the

future. The company's long absence from the computer media spotlight may be explained by Richard Hanson's quiet personality and the fact that he likes his products to speak for themselves.

Few *Electron User* readers can be unaware of the enormous range of titles that Superior has issued for their machine – starting with *Centibug* in 1983 and running through to this year's Christmas releases.

The number of games to come from the Superior Software stable is now approaching the 100 mark – most of them available for the Electron. It's a total that would have been unthinkable when Richard Hanson began programming on the Acorn Atom 10 years ago.

He first became involved with computers during a mathematics degree course at Leeds University in the late 1970s. By the end of his first year he realised micros had become more interesting to him than figures, and he switched to a course in computer science, learning languages like Basic, Algol and Fortran before graduating with a BSc.

The university didn't have any personal computers in those days, so to further his new-found hobby of programming, Richard bought himself an Acorn Atom.

The machine had just been launched and Richard describes it as "the best cheap computer around at that time – certainly it was the most useful, as the Sinclair machines with their tacky keyboards were very limited in their performance".

Richard wrote about 20 programs on the Atom – all eventually published by Micropower – ranging from a space invaders game, which was the first thing he had written in machine code, to a home budgets program and a star-tracking program for amateur astronomers.

When the BBC Micro arrived on the scene Richard wrote a further six Micropower programs of various types for the new machine, among them *World Geography*, which until very recently was still earning him royalties.

In mid-1982, at the end of his degree course, Richard decided to set up a partnership with fellow Micropower author John Dyson and Superior Software was born. By the autumn of 1982 the pair had released their first four products – *Galaxy Birds*, *Space Fighter* and *Centibug* written by Richard and *Invaders* written by John.

"It went very nicely right from the start", recalls Richard. "We had each put in £50 to start the company and I think we'd only spent about £20 of it before the money from sales started to roll in".

In 1983 came *Alien Dropout* and *Road Racer* from Richard, *Froggy* and *Hunchback* from John. Early releases typically sold



Richard and Steve Hanson



Games tester David Blackburn checks out *Network* by Peter Scott for inclusion in a new Electron compilation

about 6 to 7,000 copies, but Hunchback – with sales to date of 26,000 – propelled Superior into the forefront of BBC Micro software suppliers.

The arrival soon afterwards of the Electron sparked a feverish burst of activity as the firm's BBC Micro games were converted to run on the exciting new machine.

It is worth recording that a notable exception to conversion of the BBC Micro software stock was Road Racer, due largely to hardware scrolling limitations which ended hopes of several existing games being converted for the Electron. "Road Racer is an example of a game that was never converted. It could have been with a lot of effort, but it would have meant restructuring it and not using the hardware scrolling", said Richard.

"But by and large the games that could be converted very simply, very few changes needing to be made. They tended to fall into one of two categories, those you could convert easily and those you couldn't without a lot of effort".

As a result of this, several games in addition to Road Racer that might have been popular with owners of the new machine didn't receive the Electron treatment. "At that time we weren't sure if it was worth the investment, and by the time the machine had established itself the games were too old to convert", said Richard.

In the event Centibug became the first Electron conversion, closely followed by Alien Dropout, Invaders and Fruit Machine which was the first game written for Superior Software by an outsider.

Because Richard Hanson retained the rights to non-BBC Micro versions of the Micropower products World Geography, Constellation and Disassembler, these were also converted for the Electron.

Also in the shops around this time was Overdrive, a car racing simulation for the BBC Micro written by Peter Johnson and later converted for the Electron. It was destined to become Superior's most successful game with nearly 40,000 copies sold across both BBC Micro and Electron versions.

Interestingly the Electron version of Overdrive eventually outsold the BBC Micro version by more than two to one. Richard Hanson explains: "I think the main reason was that it was until recently the only racing

car game for the Electron whereas it had a lot of competition in the BBC Micro sector".

In fact Overdrive very nearly missed being an Electron best-seller. "It took a great deal of persuasion to get Peter Johnson to perform the conversion", recalls Richard Hanson. "Yet it was a very simple job – probably only about a day's work – and with royalties from Electron version sales of around 28,000 he did very nicely out of it in the end".

Towards the close of 1983 business had grown to such an extent that more hands were needed at the pump. John Dyson, unwilling to leave his job as a technician with BBC TV Leeds, was bought out and Richard's older brother Steve – a globe-trotting food scientist up until that time – joined the firm. His arrival marked the start of a period of major expansion for Superior Software, a move into new premises – Richard and John had been running the business from their own homes – and ongoing success in the Electron marketplace.

During its long history Superior has occasionally dipped its toe in the water of other computer makes – though never to any great effect. Its first attempt to break out of the BBC/Electron market came at the end of 1984 when seven titles were released for the C64.

"They didn't sell particularly well", said Richard. "We did a little better the next time around, and some of our releases for other machines have done quite nicely while others have not been so well received. Overall there has been little encouragement to move our major effort away from the Acorn

marketplace".

Tempest, released for the BBC Micro and Electron early in 1985, is regarded as something of a milestone for Superior because for the first time it inspired full page, four colour advertising. And it marked the point when the price of Superior games for the Electron went up for the first time – from £7.95 to £9.95.

In the summer of the same year came Repton, another tremendous success, swiftly followed by Deathstar. Christmas saw the release of Repton 2, Citadel and the software synthesiser program, Speech.

With sales of 35,000, Repton 2 is the best-selling of the famous series of captivating reptilian adventures. Counting Repton 3 and the three sets of additional screens, the series has so far notched up total sales of 120,000.

Mid-1986 saw another major event take place – an agreement with Acorn to take over publication of Acornsoft games titles. These included the mega hit Elite – which has since enjoyed sales of 17,500 in its Superior Software version – a repackaged Revs including Revs 4 Tracks, and two Acornsoft Hits compilations.

Christmas that year marked the release of Repton 3, Ravenskull and Strykers Run. "Although Repton 3 did not sell as well as its immediate predecessor, all three titles were big successes which helped us to expand the company further", said Richard.

At the start of 1987 Superior produced the

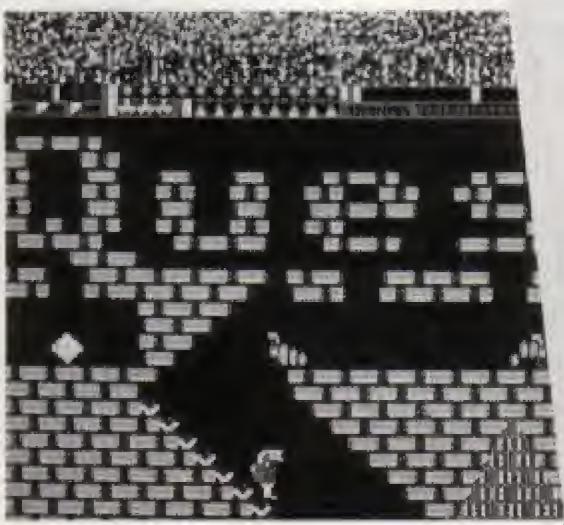
Turn to Page 38 ▶

PLAY IT AGAIN SAM



**SUPERIOR
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BBC
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From Page 37

first three of its famous Superior Collection series – two for the BBC Micro and one for the Electron.

"It was a year for consolidating our success", said Richard Hanson. "One notable event, however, was our first game for the Archimedes – Zarch by Elite co-author David Braben, the most skilful author I've ever come across".

Christmas saw the release of Life of Repton and the first Play It Again Sam compilation, both hits.

"Since the start, the Sam series compilations have always contained four titles, initially our own but more recently including games from other software houses", said Richard. "Play It Again Sam has been a great success story – we're now up to version 10 with versions 11 and 12 lined up for release before Christmas this year".

However, Richard Hanson notes that Electron disc version sales have not always come up to expectations. "Superior Collection 3 and the first Play It Again Sam have been the only Electron disc products that have sold really well", he said.

Last year Superior broke more new ground, for the first time approaching a third party developer for the rights to license a title. The result was a BBC Micro and Electron version of Palace Software's hit release Barbarian, followed soon afterwards by Last Ninja from Activision and A Question of Sport from Elite Systems.

"The move into licensing has been a success", said Richard, "though it hasn't always been plain sailing. We also tried to get permission from US Gold to produce a BBC Micro and Electron version of Outrun but couldn't pull off the deal. We'd love to produce many more conversions under licence like Barbarian and Last Ninja and the reason why we haven't done so is not for the want of trying on our part".

Superior's biggest sellers at Christmas were Exile – the result of a two-year project by Jeremy Smith and Peter Irvin – and Last Ninja.

During 1989 Superior has been busily adding to its Play It Again Sam series, as well as releasing licensed titles Barbarian II



from Palace Software, Predator from Activision and Ballistix from Psygnosis. "In fact Superior Soccer, which has only just been released, is our first original program in quite a while and we expect it to do very well", said Richard. "This isn't the result of any deliberate policy – it's just the way things have fallen into place this year".

Superior produced some titles for the Master Compact as part of its original deal with Acorn, its products since Repton have been BBC Master compatible, and it has since gone on to release programs for the Archimedes. "Sales of our Archimedes products have not been good overall, Zarch being the exception", said Richard. "Conqueror and Archimedes Repton 3 have been disappointing when compared to the sales we've achieved for BBC Micro and

Electron games.

Has Superior ever considered producing "serious" software for the Electron? "Not really", says Richard. "Our experience is with games, a sector of the marketplace which is still very profitable for us, so there is no great urge to branch out into unknown territory.

"Having said that, we have just formed a second company called Superior Microcomputing which may lead to other projects within the computer field.

"Although our software sales have gradually declined over the past year or two from their peak, it has been a slow decline and nothing either sudden or damaging has taken place.

"There remains an enormous BBC Micro and Electron user base and I feel there is still the market to sell up to 30,000 copies of a really good product. Even during the past two years sales of our best titles have topped 20,000.

"We've dabbled with software for Amstrad, Commodore, Spectrum and Amiga machines, but the Acorn market remains the best for us.

"Our commitment to it will be seen again this Christmas by which time we'll have Superior Soccer and at least two other original games in the shops. I don't even contemplate a day when Superior Software doesn't have at least three or four new Electron games in the pipeline – if that day ever comes I'm sure it will be a long way off".

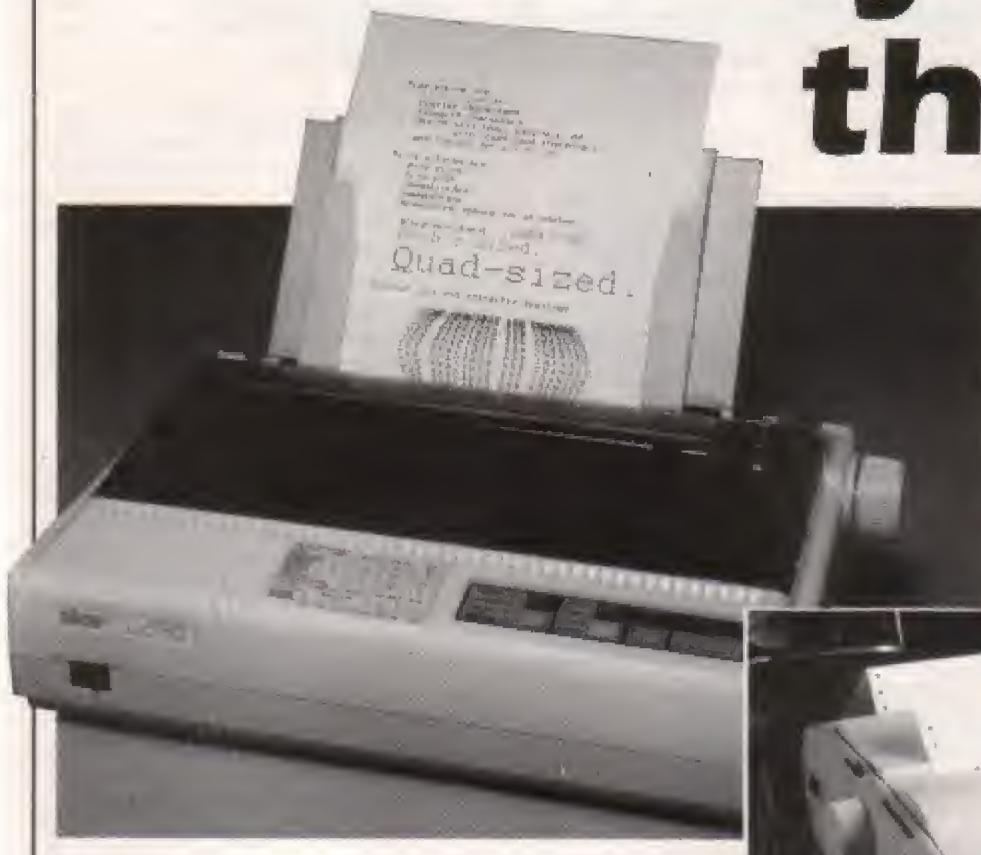
Scantily clad Maria Whittaker caused an uproar among feminists

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PALACE

Always read the fine print



Howard Roberts advises on how to choose the printer best suited for your particular purpose



THE second peripheral many Electron users will consider buying to upgrade their system is a printer. The first, of course, is a Plus 1, without which you can't use a printer. Now the range of printers available for home computer systems is vast and rather daunting.

What I aim to do is not to decide which one is best for all Electron users — that would be impossible with the enormous range of applications for which the micro is being used — but to help you decide which one is best for you.

Printers fall into two main categories, the impact and image varieties. These are split into further subgroups, each having different methods of output.

Dot matrix printers: These produce an image on the paper by imposing a sequence of dots made by small pins in the printhead which are fired forward into a ribbon by a small magnetic field.

When the pins strike the ribbon they leave marks on the paper. The pins are usually arranged in one of two configurations: Nine pins arranged vertically, or 24 pins arranged in two offset lines of 12. With 24 pins packed into the same space as nine, you get much better quality and definition.

Within the dot matrix printer market one manufacturer, Epson, has set an industry standard all others have to follow if their product is to be successful. Therefore most printers are either Epson FX (nine pin) or Epson LQ (24 pin) compatible.

Daisywheel printers: Each character has a place on a "petal" attached to a central hub — hence the daisy name. When the printer is turned on it finds a reference point and is then able to work out where each letter is on the wheel.

When the printer receives a letter from the computer it turns the wheel to the correct point and a hammer pushes the petal into the ribbon, leaving an impression on the paper.

Daisywheel printers also have an industry standard to which they should conform — Diablo 630.

Image printers: These work in a completely different way to their impact cousins, building up the page in ram before transferring it to the paper. They are often referred to as page printers because they can only print a page at a time. Such machines are almost exclusively of the laser variety and are beyond the Electron's scope.

Two new types of printer are slowly edging their way into the market, the inkjet and liquid crystal machines.

Inkjet printers such as the Hewlett-Packard Deskjet or the Integrex Colourjet 132 work by heating up a nozzle which then fires a spot of ink at the paper.

They are still new on the market and as yet conform to no obvious standard. I have

come across inkjets that emulate Epson, Hewlett-Packard and IBM printers and some that use their own codes.

Liquid crystal printers are at the forefront of technology and borrow heavily from that used in their laser brothers. Again they are really beyond the Electron's scope.

When choosing a printer the first question to ask yourself is "What am I going to use it for?"

Make a list of "musts", include things like quality of print, output speed and price. Look at the pros and cons of each type below and see which one matches your requirements most closely.

Dot matrix and inkjet

For: Fairly cheap, versatile, can print text or graphics with equal ease, very common so virtually all software can drive them, available in wide carriage versions, moderately fast at low quality output, wide range of font sizes and styles, can use continuous or single sheets of paper, colour printing available.

Against: Noisy, text and graphics of poor quality compared to laser printers, very slow when outputting graphics, feeders for single sheets are extra, software drivers for

Turn to Page 40 ▶

From Page 39

colour and 24 pin printers very rare, areas of black or colour on paper can leave large amount of wet ink which can bleed or crinkle the paper.

Daisywheel

For: Superb quality text, sometimes better than laser printers, wide range of daisywheels containing typestyles, cheapest way to get high quality text, can use cut sheet or continuous stationery.

Against: Extremely noisy, very slow, change of font or typeface available only through changing daisywheel, if petals on wheel is damaged whole wheel must be replaced, cut sheet feeders costly and virtually a necessity for long unattended print runs, incapable of printing graphics, colour not available except for very few models.

Running costs

As well as thinking about what type of printer to buy, pay some consideration to what you will have to do once you've got it. Will it be expensive to run? Are ribbons widely available? How much do extras like sheet feeders and font cartridges cost? Will software you buy in the future be capable of driving it?

For impact printers you have to think of

consumables like ribbons and sheet feeders. There are basically two types of ribbon, nylon and carbon. When a pin or a daisywheel petal hits a nylon ribbon it tends to splat slightly giving the letter a very slightly ragged edge. With a carbon ribbon the image is clean cut.

With a sheet feeder - used mainly for extended mailshots - you have to find out how many sheets it can hold, whether it can cope with envelopes or whether you have to print labels and stick them on the envelopes later.

Also consider whether it is easy to change the ribbons. Is there an authorised dealer near you who will be able to repair the printer?

What is the manufacturer's reliability record? Is the manual translated properly or is it Japlish?

Finally we come to which type of printer is best for you. I have listed some of the major applications of the Electron and the types of printer best suited:

Word processing: If you just use your word processor to knock off a quick letter to a friend or a magazine then a dot matrix printer with an NLQ (near letter quality) or LQ (letter quality) option will be quite good enough.

If however, you need mailshots or regularly write important documents, you should definitely consider a daisywheel printer.

Spreadsheets: Spreadsheets often contain huge swathes of figures and the only way to print them is to use a very small font on a very wide piece of paper. If you require this and a facility to print graphs from your figures, you should look at dot matrix.

If presentation is important look for a laser printer with the ability to print a very small font in landscape.

Painting packages: If your pictures include colour and you want a true representation there is really only one choice and that is dot matrix.

Colour inkjet drivers are virtually non-existent in the most popular art packages. However this may change as more people buy this sort of machine.

If you require high quality output you should seriously consider a good 24 pin dot matrix printer with a wide carriage.

Accounts: All the accounts packages I have seen use pre-designed continuous stationery for use with a dot matrix or daisywheel printer.

Programming: If you are a programmer and need a listing of your program you want it as quickly as possible. You don't need high quality and you want it all in one long listing and not on separate sheets. Have a look at dot matrix printers capable of high speeds using continuous stationery.

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MICRO MESSAGES

AS a subscriber to your excellent magazine, a veteran Electron user and add-on collector, I am turning to you in the hope that you will be able to help me solve a problem that has had me baffled for months. My Electron is fitted with a Slogger Master Ram Board and it was my good fortune to come across Acornsoft's Aviator in a sale recently.

The program runs perfectly in Turbo mode yet it paints a distracting flashing cursor on the screen while the game is running. Worse still, the toggle between keyboard and joystick is the Tab key, which is not present on the Electron. Nothing I have yet tried succeeds in selecting the joystick option.

I can live with the flashing cursor but would enjoy the game a whole lot more if I could use the joystick. How can this be done? — Ewan Haggarty, Locking, Weston-Super-Mare.

● Pressing Control-L generates the same Ascii code as the BBC Micro's Tab key, so if the program is using INKEY\$ to read the keyboard you should be able to select the joysticks. However, if a negative INKEY is used to test for the Tab key then there isn't any way round the problem and you're stuck with the keyboard.

...or for the Elite player

I HAVE a Commander 3 interface with utility tape for Atari type joystick but my Quickshot 2 joystick will not work with Elite.

I was wondering if you could tell me if there is any way I can use my joystick with this game? — Ian Robinson, Stoke-on-Trent, Staffordshire.

● Unfortunately, Elite can't be made to work with joysticks.

Upgrading in style

MY trusty four-year-old Electron has only just been expanded. Until now it has seen only a small collection of games played with a Quickshot 2 joystick through a Bud F-Byte interface. Both have passed their peak and so I have upgraded in style.

My new set-up includes a Rombox Plus with Slogger's printer and Stargraph roms, the expansion ram 2.0, Panasonic KX-P1081

No joystick for an Aviator

printer (recommended by you) and Slogger's joystick interface with a clear Competition Pro joystick.

The only product which hasn't thoroughly pleased me has been the joystick interface. This hasn't worked with as many games as I thought it would. I knew there would be some that didn't work, but some of my favourites, Bugblaster, Last Ninja, Beach Head and Way of the Exploding Fist among many others, just didn't load. Could you please tell me why? — Lawrence Dean, Birmingham.

● Most games aren't designed to work with joysticks, so the majority of interfaces require a software patch to be loaded before running the game. Some games use all the available memory and crash when they overwrite the joystick code, others reset the keyboard vector which is intercepted by the joystick software, so disabling it.

Steve Davis speaks up

I HAVE just read your review of Play it Again Sam 9. You say that there is no sound on Steve Davis' Snooker. On my version if you press S, hey presto, the sound comes on. — Lee Sowden, Tiverton, Devon.

Set up to go for a scroll

I WAS gobbling my daily dose of sweets in my local newsagent and there on the shelf was the amazing Electron User magazine. It has the power to keep me reading for hours — it has the best game reviews and is the best magazine ever. I think that's enough grovelling, so I'll get to the point.

I enjoy programming on the Electron, I'm writing games all the time but there are always little details I can't put into my programs to polish them up. Firstly, how do you get messages to scroll neatly across the screen?

Is it possible to have a scrolling screen, if

so how? What is the best way to create a well detailed still picture like on title pages? And finally, is it possible to use more than the 32 character squares available. — Tom Muschamid, Old Down, Tockington, Avon.

● Many scrolling routines have been published over the past few years. The most recent was Paul Clarke's in our January 1989 issue which demonstrated how to scroll the screen one pixel at a time. Here is a short routine to scroll text across the screen:

```
10 REM Text Scroller
20 MODE 6
30 PRINT TAB(0,5);
40 INPUT "Enter message:"m$;
50 VDU-23,1,0;0;0;0;
60 m$=STRING$(20," ")&m$;
70 REPEAT
80 PRINT TAB(0,10);m$;
90 t$=LEFT$(m$,1)
00 m$=MID$(m$,2)&t$
10 UNTIL 0
```

Pictures and title screens can be created using an art package such as Elkpaint published in last month's Electron User.

We're not sure what you mean by being able to use more than the 32 character squares available. Do you mean user defined characters? There is normally a limit of 32, but you can increase this with *FX20.

Unfortunately, this uses quite a lot of memory and if you want to completely redefine the character set with *FX20,6 you'll have to increase PAGE by &600.

Playing with the jet set

WE bought Jet Set Willy from a market and played it many times. Loading was no problem. We stopped using the computer completely over the summer and when I loaded Jet Set Willy after the summer it wouldn't load. I've tried lots of times, even using dif-

Turn to Page 42 ►

From Page 41

ferent tape recorders, but every time it reaches 4C on the screen 4D appears next to it and then up comes the dreaded words Data? Rewind tape.

Please can you help me? – Andy Duncan, Camberley, Surrey.

• Normally when games won't load simply adjusting the tone and volume controls cures the problem. However, in your case, it sounds as though the tape has developed a fault. Contact the software company producing the game and ask for a replacement. There may be a small charge.

Pen pals please

IT is about three years since I bought my Acorn Electron in Ulm – about half way between Munich and Stuttgart, West Germany.

It was one of the last machines sold. Until now it has been impossible to find any other Electron computer user in Germany – the salesman in the computer shop in Ulm didn't have any addresses.

I am now searching for an English Electron user who would like to help me solve my computer problems and improve my English. I will try to help with their problems and if you know a little German I will help with that too. – Oliver Debus, Muehlberg 18, D-8871 Harthausen, West Germany.

★ ★ ★

I HAVE been reading your magazine for more than three years and I would like to congratulate you for producing an excellent publication.

I own an Electron with an Advanced Plus 1 Advanced Plus 3 and View word processor cartridge. I also have the Arcade Game Creator on 3.5in disc and many games on cassette.

My hobby is computer programming and I would like to contact Electron users who understand assembly language programming and machine code. – Paul Mathews, Rydal, Coronation Road, Rodborough, Stroud, Gloucestershire.

Pascal turns up at a show

I READ with interest D. Auderson's letter in July's issue of Electron User concerning the search for a Pascal cartridge. I am currently using Turbo Pascal at college and wanted a version of Pascal to use at home.

I have not found the complete ISO-Pascal Acornsoft package, but at a recent computer show – which contained the odd item relevant to the Electron user – we picked up the main manual from one stand and the two rom chips from Slogger for £7.50 each. So it should be possible to get

All programs printed in this issue are exact reproductions of listings taken from running programs which have been thoroughly tested.

However, on the very rare occasions that mistakes may occur corrections will be published as a program they will almost certainly be the result of your own typing mistakes.

Unfortunately we can no longer answer personal programming queries concerning these mistakes. Of course, letters about suggested errors will be investigated without delay, but any replies found necessary will only appear in the mail pages.

the two chips and a blank cartridge without too much trouble.

Is there anyone who, like me, feels that the Music 5000 system should be opened up to the rest of the music world by a Midi interface? If so please write to Hybrid Technology or Pres and let them know. – Ralph Swallow, Southampton.

Mysterious symbol

I WOULD be grateful if you could answer the following query: You published a simple tape to disc copying program in the September 1989 issue.

Could you please tell me what the symbol on line 150 is? It is the eighth symbol from the end, in between STRS and (183BE). – Christopher Boots, Whyteleafe, Surrey.

• The character is a tilde and is obtained by pressing Control and the left cursor key at the same time. It is used to force the Electron to output numbers in hexadecimal rather than decimal.

No disc upgrades

I HAVE exactly the same problem as J. Nunn (September 1989) with 5.25in discs. In answer to his query, no, the Impact Software discs are not upgraded versions. I bought Play it Again Sam 1 and experienced exactly the same problems as him.

I sent the disc back to Impact who kindly gave me a voucher as a replacement. Will the discs being brought out by Pres work on my set-up? I have an Electron with Rombox Plus, Pegasus 400 disc system, T2P3, MP-135 printer, NTQ and View.

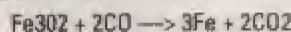
In the September 1989 issue, A.R. Dunks wrote to Micro Messages with some improvements for Home Finance Manager.

Although it looks much better, I cannot get a hard copy on the printer, although I could before I added the improvements. Any suggestions?

The August issue included a program for chemical equations. It is excellent but the Oxidation Reduction Reaction.



has the wrong answer. It should be:



Thanks for a great magazine – and now also tape, which is very useful. Keep up the good work. I like the Adventures and Micro Messages pages best. – Steven Coulter, Grimsby, South Humberside.

• Home Finance Manager should still print out after the amendments. Check that you haven't accidentally deleted line 620, as this switches the printer on.

We have sent Julie Boswell back to school to brush up on her chemical equations.

The game discs from Pres should work on your system, but we can't say for sure until we have tried them – they are still being written.

Treasurer troubles

I HAVE fairly recently become the owner of an Electron with Slogger 64k Master Ram Board, Plus 1 and Plus 3 with 3.5in single sided disc drive. I am trying to improve the word processor output for my retirement jobs as a secretary/treasurer in charities.

When I realised the printer driver program by Ian Brown published in the August 1986 issue of Electron User was for a Centronics GLP printer, as mine is, I thought it would be the answer to my prayers.

Unfortunately, highlights 130 and 134 – italics and Elite print – do not work and there appear to be no appropriate codes in the command summary list in the printer manual.

Is there any way I can overcome this? Will an alternative setting of any of the DIP switch SW2 settings help? These are set as shown in the manual apart from number 2-7, the carriage return.

The fact that these highlights are not available to me are the least of my troubles. Why did Ian Brown have to use the pound sign for the pad character facility? Secretaries, especially treasurers, need that pound sign frequently, so please will you publish an amendment to allow it to be printed. – M.A. Spencer, Bristol.

• You should be able to print in italic and Elite type styles using the listing as published. Please check lines 790 and 830 carefully. You can alter the pad character by changing the 96 in line 530. Replace it with the ASCII code of a character not often used, dollar perhaps?

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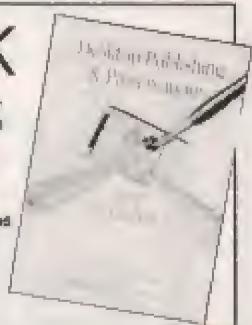
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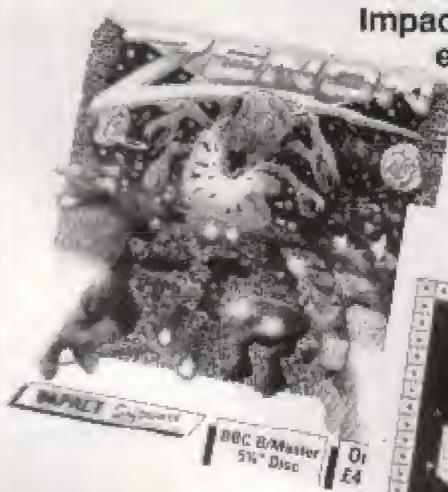
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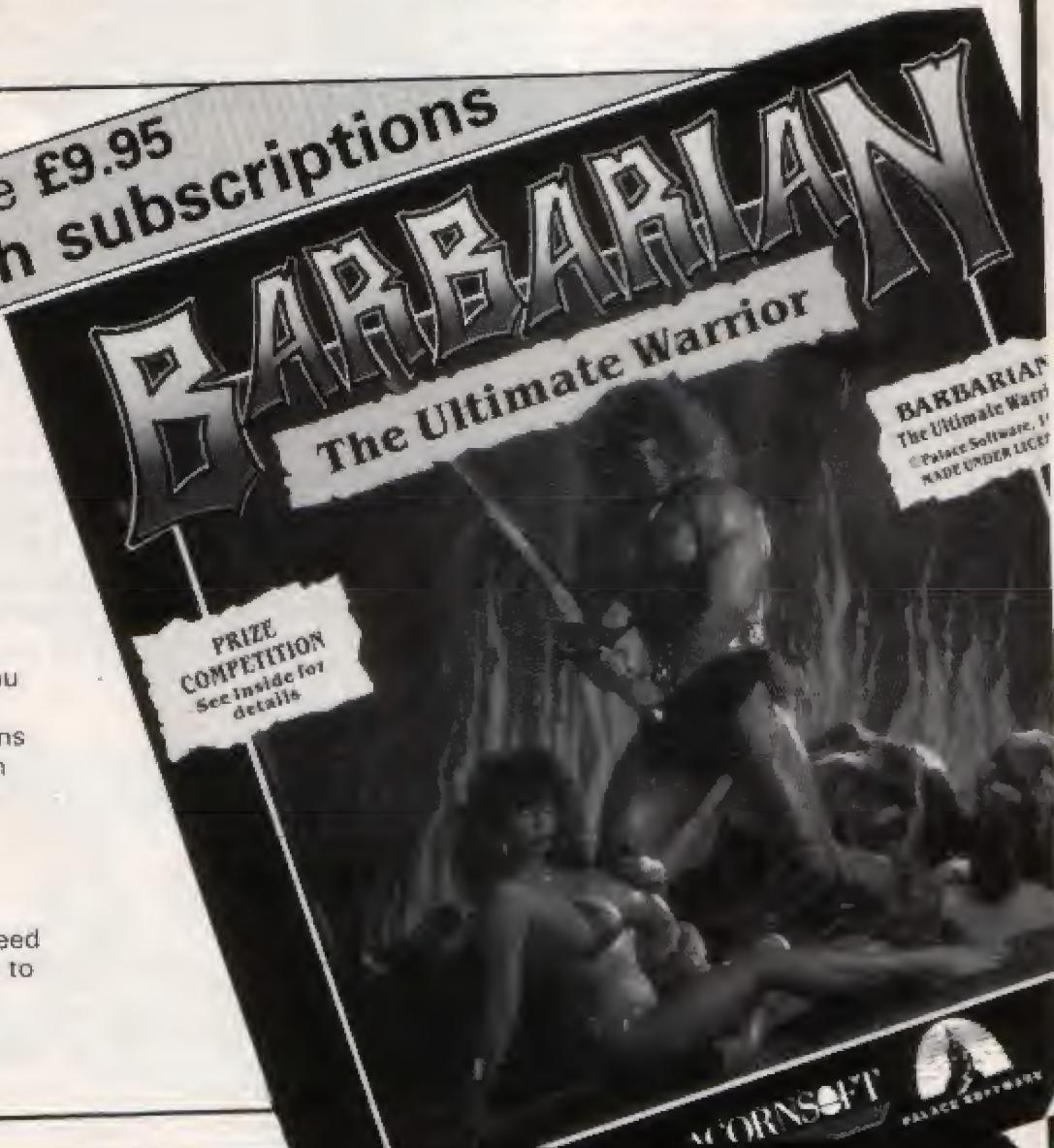
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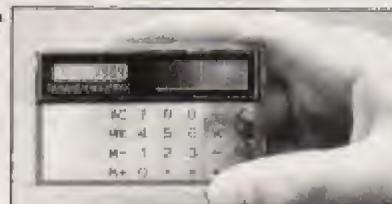
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5

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SUPERIOR SOCCER



Taking a Corner



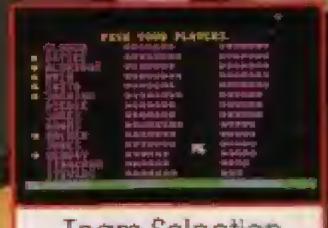
A Shot at Goal



SUPERIOR SOCCER Arcade Soccer & Football Management



Loading Screen



Team Selection

Superior Soccer, the most brilliant soccer game ever for the BBC Micro and Acorn Electron computers, combines the best game-play features of arcade soccer games with the best strategic features of football management games. You can choose to play either the action-packed arcade game or the challenging football management game, or, for the ultimate in football excitement and realism, you can play the combined arcade and management game. So you can choose to be a player, a manager or a player-manager!

ARCADE SOCCER FEATURES

- Heading, passing, dribbling, sliding tackles, corners, throw-ins, goal kicks
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- Full pitch scanner shows the positions of all players and the ball
- Control of playing time, game-skill and team colours
- Full on-screen time and score information and game comments

FOOTBALL MANAGEMENT FEATURES

- Four divisions with promotion and relegation
- Full season of games - home and away matches
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- Choose your team according to strengths and skills
- Build up your finances and success by skill and clever strategy

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(The screen pictures show the BBC Micro version of the game.)

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